☑ Fact-Checked Science

PAPER CHECK · ASTRONOMY

A dead star’s two gas rings point to two surviving bodies, not reborn ‘phoenix’ planets

Five astronomers report a white dwarf, WD J1328–1450, whose gas disc shows four peaks in its calcium and oxygen lines where every other known one shows two: gas in two separate rings, 0.14–0.34 and 0.54–1.93 solar radii from the star [1 p. 1]. ESO’s public spectra show the same four peaks in 2021 and in 2023, by our analysis [10]. The authors propose that two planetary bodies which survived the star’s death keep the rings going, a favoured explanation rather than a detection, and the sizes they give, up to Pluto’s, are upper limits that, by our estimate, assume very strong material [1 p. 4]. S0 News linked ESO’s animation of the system as “Phoenix Planets” [2][8]; nothing in the paper or the press releases says that a planet formed again, the meaning the nickname had just been given for another white dwarf’s candidate planet [12]. We read the paper in full, and the episode only as its title and description.

By Fact-Checked Science · Published October 31, 2026

OUR ANALYSIS marks our own reasoning and calculations: our co-adds of ESO’s public spectra of the star and the peaks, radii, year-to-year comparison and magnesium test we measure in them; the ring edges in kilometres; the densities and the strength behind the paper’s size limits; the values we read off its figures; and our reading of what the paper and the press releases do and do not say. The verdicts are our assessment. Everything else comes from the numbered sources. For the paper [1], read in full, p. gives a page of the version of record, Fig. a figure and ED an Extended Data table or figure; its supplement is [3], and the manuscript ESO links is [4], with l. for its line numbers.

Two gas rings are measured and two surviving bodies proposed; nothing was reborn

OUR ASSESSMENT

4 peaks

in each line of calcium’s near-infrared triplet, where the other 21 known gas discs around white dwarfs show two [1 p. 1]; ESO’s public spectra show the same four in 2021 and in 2023, by our analysis [10]

1.3 million km

how far out the outer ring reaches, 1.93 solar radii from the star; the gap inside it ends at 0.54, about the Moon’s distance from Earth [1 p. 2] (our conversion)

≤ 2,340 km

the most the outer body could measure if it is as dense as iron, by the paper’s tidal limits; Pluto is 2,377 km across. For the inner body the limit is 45–172 km [1 p. 4]

THE CLAIMS

MISLEADING

“Phoenix Planets”

The episode’s label on its link to ESO’s animation of the system [2][8]

The animation shows what the paper proposes: a dead star whose gas rings are kept going by “two planetesimals that survived the death of the star” [8]. Nothing in the paper, its supplement or the press releases says that any planet formed again or rose anew; they speak only of bodies that survived [1 p. 1][1 p. 4][7][9]. “Phoenix planet” is no research term: no arXiv title or abstract uses it [23]. It is a press nickname, and three weeks earlier it had gone to a different white dwarf, whose candidate planet, thought to have formed from what its star cast off, the University of Warwick called “the phoenix planet” [12][11]; two of that paper’s authors wrote this one too. We can’t tell whether the episode had that story in mind; either way the label reads as rebirth. “Planets” is partly ESO’s word, which calls the bodies “planet-like” [7], but they are two inferred bodies, at most asteroid-sized and at most Pluto- or Moon-sized. A 2024 use of “Phoenix” for a planet that has so far survived its red giant’s glare [13] keeps the label from False. See section 5.

TRUE

“These emission lines originate from two separate gaseous rings extending from 0.14 R☉ to 0.34 R☉ and from 0.54 R☉ to 1.93 R☉.”

The paper’s abstract [1 p. 1]

Each calcium line has two pairs of peaks, near ±500 and ±210 km/s, and a model of two rings in orbit fits them [1 p. 2][1 Fig. 2][3 p. 6]. In ESO’s public spectra we find the same peaks, 1,011–1,074 and 422–435 km/s apart against the paper’s 1,024 ± 120 and 420 ± 52, and no change from 2021 to 2023 beyond the noise (our analysis) [10]. Three caveats. The radii scale with the white dwarf’s mass, which the fit holds at 0.47 solar masses although it is uncertain by ±19% [1 p. 5]. The gap’s outer edge is loose, 0.54 (+0.44/−0.16) solar radii [1 p. 2]. And a single disc whose middle lies in shadow could look the same, a reading the authors leave open but find no model for [1 p. 2][3 p. 3][3 p. 4]. See section 2.

UNCONFIRMED

“We propose that this structure results from the presence of two distinct planetary bodies within these discs”

The paper’s abstract [1 p. 1]; its title says “sculpted by two planetary bodies”

The case is an analogy. Inside the gas disc of another white dwarf, SDSS J1228+1040, a solid body is thought to orbit, betrayed by a 123.4-minute signal in its lines [15], and the authors argue that dust meeting such bodies is the likeliest source of gas held in two separate rings: so two rings, two bodies [1 p. 4]. Neither body is seen, and the text calls them “theorized planetesimals” [1 p. 4]. Of the alternatives the authors weigh, two white dwarfs, one body clearing a gap and gas made at a disc’s edge or by colliding dust each meet a problem [1 p. 2][1 p. 3][3 p. 2][3 p. 3]. Self-shadowing is set aside because no model supports it, no other disc shows it and nothing about this star would explain why it alone should shadow itself, not because anything rules it out [1 p. 2][3 p. 3][3 p. 4]. A favoured explanation, not a finding. See section 4.

TRUE

“...one possibly as big as Pluto...”

ESO’s press release, on the larger of the two bodies [7]

Pluto is the paper’s maximum, not an estimate. A body this close to a white dwarf escapes being torn apart only if it has internal strength; for an iron-like body the paper puts the largest at 346 km at the outer ring’s inner edge and 2,340 km at its outer edge, about Pluto’s 2,377 km, and for a rocky body “with moderate internal strength” up to about 3,500 km, the Moon’s size [1 p. 4]. By our estimate, the maximum assumes a strong material. The paper speaks of “typical internal strengths for rocky Solar System bodies” and gives no value, but by the formula of an earlier study its numbers imply some 350–550 megapascals, up to about the 500 its supplement calls the upper bound for iron bodies (our analysis) [15][3 p. 2]. Weaker material would allow only smaller bodies. “Possibly” fits a maximum. This verdict is on the size; that the bodies exist at all is claim 3, Unconfirmed. See section 4.

PARTLY TRUE

“...the inner ring rich in magnesium gas and the outer largely stripped of it. This suggests that the planetesimals that feed the rings originated from two planets with different compositions. An alternative explanation is that they are the result of different parts of a celestial body, like the crust and core of a planet.”

ESO’s press release [7]

The finding holds: magnesium’s line at 8806 Å comes only from the inner ring, and with the inner ring’s mix the outer one would show it at more than 6σ [1 p. 2][1 p. 6]; ESO’s public spectra agree (our analysis) [10]. The explanations are changed. The paper speaks of “distinct parent bodies”, not planets, and sets magnesium-rich mantle against magnesium-poor crust [1 p. 2]; ESO’s “core” would be poor in magnesium too, being mostly iron (our analysis). And the release’s preceding sentence, a composition “similar to that of rocky planetary material found in our own Solar System” [7], goes a step beyond the published paper, whose supplement says only that the disc’s debris does not look peculiar [3 p. 3][3 p. 4]. The comparison with Solar System rock comes from the authors’ pre-acceptance manuscript, whose ratios for the star’s atmosphere the published paper replaced [4 l. 54–60][1 ED Table 1]. See sections 3 and 8.

OVERSTATED

“Dead star and planetary bodies: astronomers spot unique disc of debris that foretells Solar System’s future”

ESO’s press release, its headline [7]

The general point is sound: the Sun will become a white dwarf of about 0.54 solar masses some 7.7 billion years from now, and Earth is engulfed on the way in Schröder and Smith’s models, though earlier studies differed [20]. Asteroids that survive could later be torn apart near it, as at white dwarfs like this one [21 Abstract]. But the paper says nothing about the Solar System’s future: its closing link is that “similar processes may shape both the formation and the final evolution of planetary systems” [1 p. 4]. This disc is the only one of 22 known with two rings [1 p. 1], so it foretells no particular outcome. The release’s own text is more careful: our system “could meet a similar end”, and it quotes a co-author calling the system a “remarkable glimpse of what the future of planetary systems, including systems like our own, might look like” [7]. See section 6.

1 · THE PAPER

Five astronomers found a white dwarf whose gas disc shows four peaks where every other shows two

The authors, at the universities of Trieste, Warwick and Kiel, Imperial College London and Chile’s Universidad Técnica Federico Santa María, observed the white dwarf WD J132800.85–145019.95, WD J1328–1450 for short, with ESO’s Very Large Telescope from 2021 to 2023 [1 p. 1][1 p. 4]. A white dwarf is the burnt-out core a star like the Sun leaves behind. The paper is peer reviewed and open access, and we read it in full, with its Extended Data and its supplement [1][3].

STEP 1

The star

Picked out in Gaia’s data and flagged by an infrared excess, it has a helium atmosphere at 17,424 ± 567 K and a mass of 0.47 ± 0.09 Suns, and has been cooling for 73 (+49/−26) million years [1 p. 1][1 p. 4][1 p. 5]. It lies about 500 parsecs away [3 p. 2], some 1,600 light years (our conversion).

STEP 2

The spectra

Ten spectra from ESO’s X-shooter, taken on 15 May, 28 June and 2 July 2021 and on 12 May 2023, show calcium, magnesium and silicon in the star’s atmosphere and emission lines of calcium, oxygen, magnesium and iron from gas around it [1 p. 1][1 p. 4][1 p. 5]. ESO’s archive holds 11; the paper does not say whether it left one out [10].

STEP 3

The model

Two flat, circular, concentric rings of gas in orbit, fitted to the calcium lines with the white dwarf’s mass held at 0.47 Suns; the fit gives each ring’s inner and outer edge and how far they are tilted from face-on, 77 (+9/−13) degrees [1 p. 2][1 p. 5][1 ED Table 3].

STEP 4

The bodies

To explain gas confined to two rings, the authors propose a planetesimal in each, and bound their sizes by what could survive the white dwarf’s tides that close in [1 p. 4].

In the authors’ words R☉ is the Sun’s radius, 695,700 km.

> *“All of the 21 known gas discs exhibit double-peaked line profiles characteristic of a rotating flat disc.”*
>
> Gentile Fusillo et al. (2026), abstract [1 p. 1]

> *“We propose that this structure results from the presence of two distinct planetary bodies within these discs, ranging in size from a few kilometres to the size of Pluto.”*
>
> Gentile Fusillo et al. (2026), abstract [1 p. 1]

> *“Our analysis suggests that two dense planetary bodies are required to sustain this double disc”*
>
> Gentile Fusillo et al. (2026) [1 p. 4]

WHAT WE READ

The full text

the version of record, 13 pages with its Extended Data, and the 10-page supplement; we also compared two earlier versions (section 8) [1][3]

STATUS

Peer reviewed

received February 16, accepted September 17 and published October 26, 2026, in *Nature Astronomy*; “The authors declare no competing interests” [1 p. 1][1 p. 8][6]

LICENCE

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so its figures may be adapted, with credit; section 2 draws its rings to scale after its Fig. 3 [1]

Who paid, and what is shared

Italy’s “Rita Levi Montalcini” programme, a European Research Council grant under Horizon 2020 and a Chilean postdoctoral grant; the University of Trieste paid for open access [1 p. 8]. The spectra are public in ESO’s archive; the code that fits the discs is “available from the corresponding author on reasonable request”, and the atmosphere code is not available [1 p. 7].

OUR ANALYSIS

What the paper does not give

No value or formula for the internal strength behind its size limits, and no lower limit on the sizes: the abstract’s “a few kilometres” is not derived in the text [1 p. 1][1 p. 4]. No abundances for the gas itself, only which elements shine and that magnesium’s line is missing from the outer ring [1 p. 2]. And no detection of either body: the case for them is an argument, set out in section 4.

2 · FOUR PEAKS, TWO RINGS

The gas orbits in two separate rings, 97,000 to 237,000 km and 376,000 to 1.34 million km from the star

Gas circling a star sends us light from one side coming towards us and the other going away, so each emission line splits into two peaks, wider apart the faster the gas moves. Every gas disc known around a white dwarf shows two peaks; this one shows four in its calcium and oxygen lines, two pairs from two rings moving at different speeds [1 p. 1][1 Fig. 1].

What the paper measured

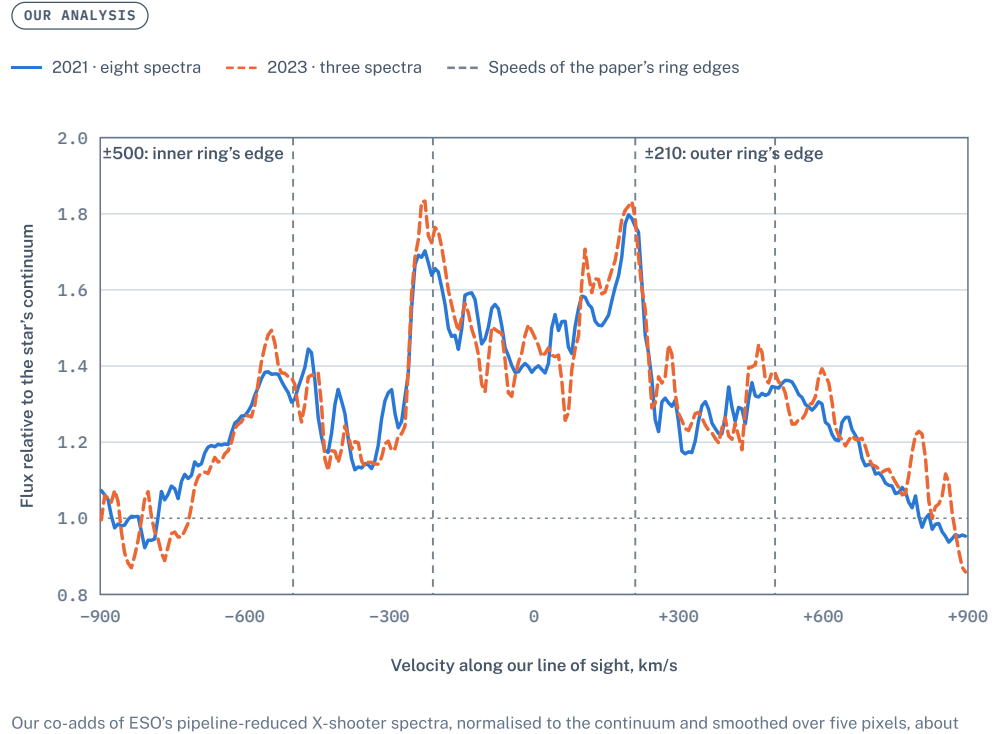
Fitting the calcium triplet, the inner ring runs from 0.14 (+0.01/−0.02) to 0.34 (+0.02/−0.05) solar radii and the outer from 0.54 (+0.44/−0.16) to 1.93 (+0.10/−0.30), seen 77 (+9/−13) degrees from face-on [1 p. 2][1 ED Table 3]. The pairs of peaks lie 1,024 ± 120 and 420 ± 52 km/s apart [3 p. 6]. The inner ring is brightest at its inner edge and the outer at its outer edge [1 p. 2]. Oxygen gives a consistent but less certain fit; magnesium shows only the inner ring (section 3) [1 p. 2][1 p. 5]. “The nearly symmetric profile of the emission lines has remained unchanged for more than 2 years” [1 p. 2].

The dust

Dust shows as infrared light beyond what the star gives: 2.7% of the star’s output, “one of the brightest dusty debris discs published to date” [1 p. 2]. A model with the dust from 0.25 to 2.0 solar radii, puffed up and flaring, fits it, but the authors stress that other layouts may fit “equally well” and that the dust’s glow “offers no comparable constraint on the spatial distribution of solid material” [1 p. 2]. The gap, in other words, is seen in the gas.

The same four peaks in 2021 and 2023: calcium’s 8662 Å line in ESO’s public spectra

OUR ANALYSIS



Our co-adds of ESO’s pipeline-reduced X-shooter spectra, normalised to the continuum and smoothed over five pixels, about 35 km/s [10]. The two tall peaks come from the slower outer ring and the two lower ones from the faster inner ring. The dashed lines mark ±210 and ±500 km/s, the speeds along our line of sight at the paper’s outer edges, 1.93 and 0.34 solar radii, for its mass and tilt (our calculation) [1 p. 2]. Based on data obtained from the ESO Science Archive Facility with DOI 10.18727/archive/71.

INNER RING’S OUTER EDGE

OUR ANALYSIS

0.30–0.33

solar radii, from our peak separations for the paper’s mass and tilt; the paper fits 0.34 (+0.02/−0.05) [10][1 p. 2]

OUTER RING’S OUTER EDGE

OUR ANALYSIS

1.80–1.91

solar radii by the same sum; the paper fits 1.93 (+0.10/−0.30). The radii follow mass × sin² of the tilt over the speed squared [10][1 p. 2]

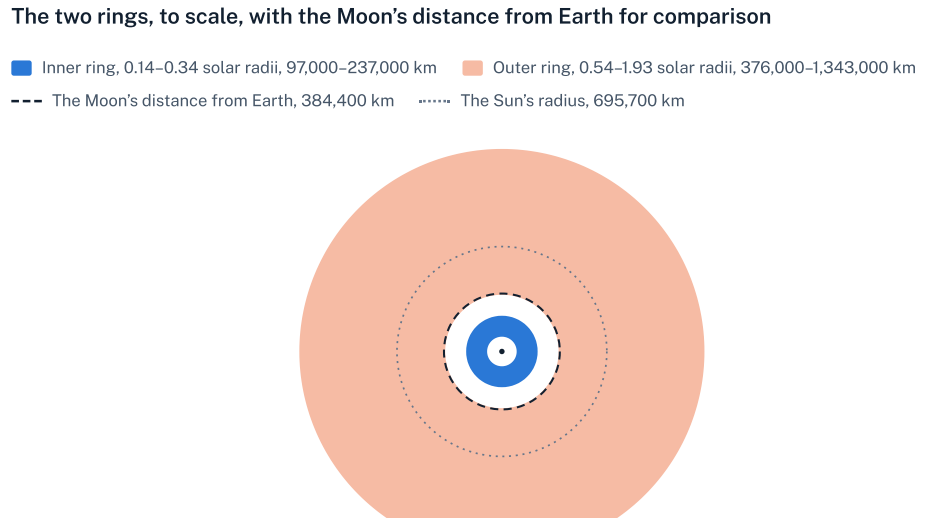
LEFT OUT OF THE ERRORS

OUR ANALYSIS

±19%

on every radius from the mass alone, 0.47 ± 0.09 Suns, which the fit holds fixed [1 p. 5]. With mass and tilt at the ends of their ranges, the outer edge could lie anywhere from 1.2 to 2.4 solar radii

The two rings, to scale, with the Moon’s distance from Earth for comparison


Inner ring, 0.14–0.34 solar radii, 97,000–237,000 km
Outer ring, 0.54–1.93 solar radii, 376,000–1,343,000 km
The Moon’s distance from Earth, 384,400 km
The Sun’s radius, 695,700 km

Drawn from the ring edges the paper fits [1 p. 2], after its Fig. 3 (CC BY 4.0) [1 Fig. 3]. The white dwarf, with a radius of about 0.015 solar radii, is the dot at the centre [1 p. 2]. The Moon’s orbit and the Sun’s radius are added for scale; the kilometres are our conversion.

OUR ANALYSIS

What we re-measured

ESO’s archive holds 11 public, pipeline-reduced spectra of the star in the red arm that covers these lines: three each on 15 May and 2 July 2021 and 12 May 2023, and two on 28 June 2021 [10]. We co-added them by year and normalised them, without the telluric correction the authors made [1 p. 5]. Every calcium line shows the two pairs of peaks in each year. In the 8542 and 8662 Å lines the flux between the pairs drops to about 1.2 times the continuum, against 1.7–1.9 at the outer ring’s peaks; in the weaker 8498 Å line, to about 1.05 against 1.6 [10]. The 2021 and 2023 profiles differ no more than line-free stretches of the same spectra do, so the paper’s “unchanged” holds, over 727 days: just under two years, so its “more than 2 years” is a few days generous [10][1 p. 2].

OUR ANALYSIS

How firm the gap is

That there are two rings follows from the two pairs of peaks. Where the outer ring begins is less certain: its inner edge could lie anywhere from 0.38 to 0.98 solar radii within one standard deviation [1 ED Table 3], and the model allows no overlap between the rings by design [1 ED Table 3]. The gap is a gap in light: the authors’ own alternative, a single disc whose middle lies in the shadow of a puffed-up inner rim, would give the same four peaks with gas still in between [3 p. 3]. They set it aside because no model of white-dwarf discs predicts it and no other disc shows four peaks [1 p. 2][3 p. 3].

3 · MAGNESIUM

The outer ring lacks the magnesium the inner one shows

Magnesium’s line at 8806 Å has only the inner ring’s two peaks. Where the outer ring’s would be, there is nothing above the noise [1 p. 2][1 ED Fig. 2].

The paper’s test

From the calcium lines, the paper finds that “the outer disc produces, on average, 1.22 times more flux than the inner disc”. If magnesium were mixed the same way in both rings, the outer ring’s magnesium peaks would reach 2.37×10^{-17} in the paper’s flux units, against the $(1.58 \pm 0.13) \times 10^{-17}$ measured there: about 6σ [1 p. 6]. Oxygen, which needs about twice the energy to make shine, appears in both rings, so the outer ring is warm enough for magnesium. The authors call the result “direct, model-independent evidence that Mg is significantly depleted in the outer ring relative to the inner ring” [1 p. 2].

OUR ANALYSIS

In ESO’s public spectra

At ±207 km/s, where the outer ring’s magnesium peaks would fall, the flux is 1.10 and 1.12 times the continuum, about what the inner ring gives there on its own. Scaled from the inner ring as the paper does, 1.22 times the whole peak, the outer ring would reach about 1.52; scaling only the line above the continuum, our own variant, gives 1.45. Either is some 8 to 10 standard errors above what we see [10][1 ED Fig. 2]. We took the inner ring’s peak height from the paper’s figure, read by eye, because in ESO’s pipeline spectra both of magnesium’s inner peaks sit beside narrow spikes left by the night sky’s own emission lines; the paper flags the red side of this line as uncertain too [1 Fig. 2]. The paper’s “1.22 times more flux” is a ratio of peak heights: in total light the outer ring gives less than the inner, 0.68–0.89 times as much, by its own fit [1 p. 5][1 ED Table 3]. Either way the shortfall is large.

What the authors make of it

> *“The marked difference between the two rings strongly suggests that they originate from distinct parent bodies with different formation histories or, alternatively, from different structural layers of a differentiated planetesimal (for example, Mg-rich mantle material versus Mg-depleted crustal material).”*
>
> Gentile Fusillo et al. (2026) [1 p. 2]

> *“The only unusual property in the photospheric pollution of WD J1328–1450 is the rather low Mg to Si abundance ratio at 0.2, while in other debris accreting white dwarfs the value is usually between 0.85 and 1.2”*
>
> Gentile Fusillo et al. (2026), on the star’s atmosphere [1 p. 2]

In the star’s atmosphere

Debris falling onto the star leaves calcium, magnesium and silicon in its atmosphere; the rates at which it arrives are “unremarkable” against other polluted white dwarfs [1 p. 1][1 p. 2]. The low ratio of magnesium to silicon may be partly an artefact, since magnesium rests on one line that may be blended, “leading to possible underestimation” [1 p. 2]. Alternatively, the disc may be young, the star having taken in debris for only the past 300,000 to 600,000 years [1 p. 2].

OUR ANALYSIS

What it shows, and what it doesn’t

It shows that the outer ring’s gas, as seen in this one line, holds much less magnesium than the inner ring’s. It doesn’t show where either ring’s material came from: the paper offers two readings, two parent bodies or two layers of one, and tests neither [1 p. 2]. And “model-independent” still assumes that magnesium would shine in the same way in both rings, which the authors argue from oxygen [1 p. 6].

4 · TWO BODIES, HOW BIG?

The bodies are inferred, and their sizes are upper limits that, by our estimate, assume very strong material

So close to a white dwarf, tides tear apart anything held together only by its own gravity; a body survives there only if it is extremely dense or has internal strength [1 p. 4]. The bodies are the authors’ explanation for the rings, and the sizes are the most that could survive.

STEP 1

A precedent

In the gas disc of SDSS J1228+1040, a 123.4-minute signal in the calcium lines was read in 2019 as a solid body orbiting 0.73 solar radii out, between 4 and 600 km across, perhaps an iron core [15]. Its gas has kept the same pattern for decades, turning slowly about every 25 years [1 p. 3].

STEP 2

The argument

Gas spreads out unless it cools and condenses again near where it is made; two separate, stable rings need gas made in two places. Dust meeting a solid body is “the most likely origin of the gas, and two gas discs would therefore require two planetesimals on concentric orbits” [1 p. 3][1 p. 4].

STEP 3

Without strength

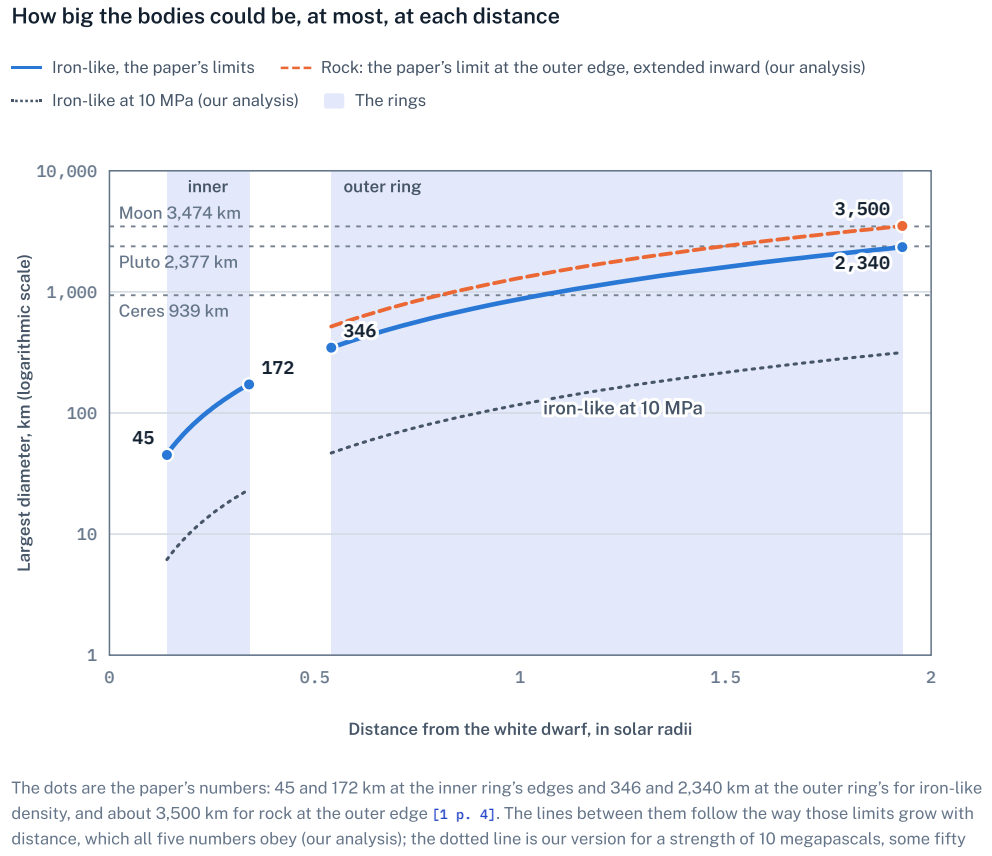
A body with no strength would need a density above any known material: at least 3,600 g/cm³ at the inner ring’s inner edge, 252 at its outer edge and 63 at the outer ring’s inner edge, against about 8 for iron [1 p. 4]. Our arithmetic with the classical limit for a fluid body gives 3,508, 245 and 61 (our analysis; section 9).

STEP 4

With strength

“Using typical internal strengths for rocky Solar System bodies”, the paper derives the largest body that could survive at each edge of each ring [1 p. 4]: the chart below.

How big the bodies could be, at most, at each distance



The dots are the paper’s numbers: 45 and 172 km at the inner ring’s edges and 346 and 2,340 km at the outer ring’s for iron-like density, and about 3,500 km for rock at the outer edge [1 p. 4]. The lines between them follow the way those limits grow with distance, which all five numbers obey (our analysis); the dotted line is our version for a strength of 10 megapascals, some fifty times lower, for comparison (our analysis; section 9). Diameters of Ceres, Pluto and the Moon for comparison.

OUR ANALYSIS

The strength behind the limits

The paper speaks only of “typical internal strengths for rocky Solar System bodies”, and of “moderate internal strength” for its rocky case, and gives no value and no formula [1 p. 4]. Its numbers follow exactly the dependence on distance and density of the formula used in that 2019 study, which four of its five authors co-wrote, for a body held together by its strength [15]. With that formula all five imply a tensile strength of about 530–550 megapascals if the paper’s sizes are the formula’s “size”, which is about 1.65 times a body’s radius, or about 360–380 if they are true diameters; scaled to the one case its supplement spells out, about 460 either way (our analysis; section 9) [15][3 p. 2][3 p. 3]. That supplement calls 500 megapascals “the upper bound of what observed for iron bodies” [3 p. 2]. So, by our estimate, the limits assume very strong material, close to iron at its strongest, even for the rocky case. With 10 megapascals, some fifty times lower, the limits would be 6–23 km in the inner ring and 47–315 km in the outer (our analysis). This inference rests on the earlier study’s formula; the paper may have used another.

OUR ANALYSIS

“A few kilometres” is not derived

The text derives only upper limits: “the upper size of the inner planetesimal would be that of a typical asteroid”, at most 45–172 km if iron-like, and the outer could be at most anywhere from a few hundred kilometres to Pluto- or Moon-sized, depending on where it orbits [1 p. 4]. No lower limit appears. The abstract’s “ranging in size from a few kilometres to the size of Pluto” gives a lower end the text never explains [1 p. 1]. ESO’s release follows the abstract and states as an estimate what the paper gives only as limits: the inner body “is the size of a typical asteroid, a few kilometres in diameter” [7]. The University of Warwick’s release also says a few kilometres, at a maximum, while its caption for its own illustration says “a few tens of kilometres” [9].

The alternatives the authors weigh

Two white dwarfs, one disc each

Gaia sees one source and could separate two stars only beyond about 150 astronomical units at this distance. But only 0.067% of white dwarfs have a gas disc, so two at once, each kept going independently, would be a long coincidence [3 p. 2][16 Abstract].

One body clearing a gap

As planets carve gaps in young discs. But it would shrink the dust’s glowing area, which is already too bright for a simple disc, and it could not hold the gas: the supplement takes an iron body of at most 440 km at 0.62 solar radii and puts its escape speed at 1.4 m/s [1 p. 2][3 p. 2][3 p. 3]. That figure doesn’t follow from the supplement’s own inputs, which give about 0.5 km/s, but the conclusion stands: so close in, the white dwarf’s pull would strip gas from any such body, since the region its gravity controls is no bigger than the body itself (our analysis; section 9). Nor would one body make gas in either ring [3 p. 3].

Gas from the disc’s edge, or from colliding dust

Vaporising at the inner edge of the dust cannot leave a gap in the gas; a cascade of collisions would need “some unknown mechanism” acting in one band only [1 p. 3].

A disc in its own shadow

A puffed-up inner rim could shadow the middle of a single disc, giving four peaks and explaining the bright dust and the opposite brightness profiles. But “no direct evidence of this phenomenon exists”, no other white dwarf, nor any young star’s disc, shows four peaks, and nothing about this star is unusual [3 p. 3][3 p. 4].

5 · PHOENIX PLANETS?

Every source says the bodies survived; the phoenix nickname had just gone to a candidate reborn planet around another white dwarf

The phoenix of myth burns and rises again from its ashes. S0 News put the label “Phoenix Planets” on its link to ESO’s animation of this system [2][8]. No transcript was available, so the episode’s own words could not be checked; we rate the label against what it links to [2].

What the linked sources say

> *“The most likely explanation is that these two gaseous discs are maintained by two planetesimals that survived the death of the star.”*
>
> ESO’s animation page, the episode’s link [8]

> *“...two planetary bodies, one possibly as big as Pluto, that have survived the violent death of the star.”*
>
> ESO’s press release [7]

> *“Many planetary systems survive the metamorphosis of their host stars into white dwarfs”*
>
> Gentile Fusillo et al. (2026), the abstract’s first words [1 p. 1]

A nickname, used twice

In June 2024 Johns Hopkins University wrote of a puffy planet orbiting a red giant, TIC 365102760 b: “Nicknamed ‘Phoenix’ for its ability to survive its red giant star’s radiant energy” [13][14 Abstract]. On October 5, 2026, three weeks before this paper, the University of Warwick headed a release “The phoenix planet” [12]. It concerned HS 0209+0832, a white dwarf whose atmosphere is rich in zinc, copper and niobium, which its authors read as the mark of a candidate “second-generation planet, formed from the stellar material ejected during the giant phase” [11 Abstract][12]. The paper itself never uses the word [11]. Boris Gänsicke and Detlev Koester are authors of both papers [11][1].

OUR ANALYSIS

Why Misleading

The label has a true core: the animation shows a dead star whose disc is probably kept going by bodies that came through its death [8]. But “phoenix” reads as rebirth, and in the weeks before the episode the phrase had just been given, by the University of Warwick in a release quoting Boris Gänsicke, a co-author of both papers, to a candidate planet thought to have formed anew around a different white dwarf [12][11]. Nothing here formed again: the paper’s bodies are survivors of the star’s death [1 p. 1][1 p. 4]. Its one remark about formation, that the rings look “strikingly similar to structures commonly seen in protoplanetary discs”, concerns the rings’ shape, not new planets [1 p. 4]. And “planets” overstates two inferred bodies, one at most asteroid-sized and the other at most a few hundred kilometres to Pluto- or Moon-sized, under a generous strength (section 4), though here the episode follows ESO, which calls them “planet-like bodies” [7]. We can’t know whether the episode meant the October story; without a transcript we rate the label as it reads. The 2024 nickname, for a survivor, is why it isn’t False.

“Phoenix planet” is not a term of the research literature, as far as arXiv shows: a search of its titles and abstracts on October 31, 2026, found none, and where “phoenix” and “planet” meet in the abstracts of its categories for planets and stars, PHOENIX is a code that models stellar atmospheres or an instrument [23]. We could not search full texts in NASA’s Astrophysics Data System, which needs an account.

6 · THE RELEASE AGAINST THE PAPER

ESO’s release gets the finding right and stretches the sizes, the compositions and the Solar System

ESO announced the paper on October 27, 2026, with the animation the episode linked; the University of Warwick issued its own release the same day [7][8][9]. We set each of the release’s claims beside the paper.

ESO’s words, the paper and our verdicts

ESO SAYS	THE PAPER	VERDICT
“this is the first example of a complex system with a double debris disc and potentially two surviving planetesimals” (the lead author, quoted) [7]	The first four-peaked gas disc of 22 known; the paper hedges the bodies too (“We propose”) [1 p. 1]	TRUE
“one possibly as big as Pluto” [7]	At most 2,340 km if iron-like, about 3,500 if rock, for strengths the paper calls typical [1 p. 4]; by our estimate they match the strongest iron (our analysis)	TRUE
“They estimate that the one in the inner ring is the size of a typical asteroid, a few kilometres in diameter” [7]	Gives only an upper limit, 45–172 km if iron-like, and no basis for the lower end; Warwick’s caption says “a few tens of kilometres” [1 p. 4][9]	PARTLY TRUE
“All known debris discs around white dwarfs have been identified by the same observational signature, which indicates the presence of a single, flat, rotating disc.” [7]	True of the 21 gas discs [1 p. 1]. Most debris discs are known from their dust: 1–3% of white dwarfs have one, and about 0.067% show gas [16 Abstract]	PARTLY TRUE
“...the inner ring rich in magnesium gas and the outer largely stripped of it ... two planets ... like the crust and core of a planet” [7]	The magnesium finding holds; the paper says parent bodies, not planets, and mantle against crust [1 p. 2]	PARTLY TRUE
“...a composition similar to that of rocky planetary material found in our own Solar System” [7]	Goes a step beyond the published paper, whose supplement says only that the disc’s debris does not look peculiar; the comparison with Solar System rock comes from an earlier manuscript (section 8) [3 p. 3][3 p. 4][4 l. 54–60]	PARTLY TRUE
“...disc of debris that foretells Solar System’s future” (the headline) [7]	Says nothing about the Solar System’s future [1 p. 4]	OVERSTATED
“a planetary system that was vaporised to rubble as the star died” (the animation page) [8]	The star has cooled for 73 million years, and the disc may be only a few hundred thousand years old [1 p. 2][1 p. 5]; discs form when bodies stray close and are torn apart long after a star’s death [21 Abstract]	PARTLY TRUE
“found that it moves at two distinct speeds” (the animation page) [8]	Two pairs of peaks, near ±500 and ±210 km/s, which we see too [3 p. 6][10]	TRUE

The verdicts are ours. The release’s own closing is more careful than its headline: our Solar System “could meet a similar end”, in a process that “may destroy Earth” [7].

7 · CONTEXT

Gas discs are rare, survivors have been seen before, and so has a candidate reborn planet

White dwarfs are polluted by the debris of rocky bodies that strayed too close and were torn apart; giant planets, minor planets and discs of debris have all been found around them [21 Abstract].

Gas discs are rare

The first was found around SDSS J1228+1040 in 2006, the prototype of the class, by a team at Warwick [18 Abstract][1 p. 2][9]; a 2021 survey brought the total to 21 [17 Abstract]. About 0.067% of white dwarfs show one, and about 4% of those with a dusty disc, which 1–3% have [16 Abstract]. A 2025 search of new survey spectra lists 22 tentative candidates, most of them “likely” false alarms [22 Abstract].

A body inside a disc

SDSS J1228+1040’s disc holds the precedent for this paper’s bodies: a 123.4-minute signal from something orbiting 0.73 solar radii out, which needs internal strength to survive there (a fluid body would need 39 g/cm³) and is between 4 and 600 km across [15].

A planet that survived

WD 1856+534 b, found in 2020, is a giant planet candidate that passes in front of its white dwarf every 1.4 days, about the size of Jupiter and no more than 14 times its mass [19 Abstract]. Like the bodies here, it outlived its star.

A planet that may be reborn

HS 0209+0832, the “phoenix planet” of October 2026: material rich in heavy elements made late in a star’s life suggests a giant planet that formed after the star’s main life, a candidate, with a brightness rhythm of 4.399 ± 0.026 days [11 Abstract].

The Sun’s turn

In Schröder and Smith’s models the Sun swells to about 1.2 astronomical units at the tip of its red-giant phase, some 7.6 billion years from now; Earth “will not be able to escape engulfment”, and a planet would need to start at least about 1.15 astronomical units out to survive. The Sun ends as a white dwarf of 0.54 solar masses [20]. Earlier studies they cite had found that Earth might survive [20]. Mars and the outer planets survive in their models, and with them the asteroids that could one day pollute the solar white dwarf as debris pollutes this one [20][21 Abstract].

8 · WHICH VERSION

We cite the version of record; ESO links an earlier manuscript

Three versions of the paper are public, and their headline numbers agree. One sentence differs in a way that matters for ESO’s release [1][4][5].

ESO’S LINK

A manuscript

the authors’ line-numbered text, dated August 7, 2026, by its file, six weeks before acceptance, with no Extended Data and no supplement [4]

ARXIV, OCTOBER 27

Accepted text

the manuscript as accepted, with the Extended Data and supplement appended [5]

NATURE ASTRONOMY, OCTOBER 26

Version of record

the copy-edited paper we cite as [1], with its supplement as [3] [1][3]

OUR ANALYSIS

Read with care: a sentence the paper dropped

The manuscript ESO links gives the star’s atmosphere ratios of magnesium and silicon to calcium as 0.93 and 0.84 in logarithmic units, “broadly compatible with the composition of rocky bodies in the inner solar system” [4 l. 54–60]. The published paper drops that sentence [1 p. 1]. Its Extended Data imply 0.50 and 1.20 instead, a magnesium-to-silicon ratio of 0.2, which the paper itself calls unusually low, against 0.85–1.2 in other polluted white dwarfs [1 ED Table 1][1 p. 2]; the manuscript’s own Methods give the same 0.2 [4 l. 328–330]. ESO’s line on the disc’s composition, “similar to that of rocky planetary material found in our own Solar System”, echoes the dropped comparison [7]; the published supplement says only that the disc’s debris does not look peculiar [3 p. 3][3 p. 4].

9 · REPEAT OUR NUMBERS

One script fetches ESO’s public spectra and recomputes everything we derive

It downloads the 11 spectra from ESO’s data portal, checks them against the checksums we saw, and writes the peaks, radii, year-to-year comparison, magnesium test and arithmetic shown on this page [10].

PY **j1328_numbers.py**
Fetches the spectra and recomputes our numbers; standard library only · 19 KB

CSV **j1328-profiles.csv**
Our co-added, normalised profiles of calcium’s 8662 Å line (2021 and 2023) and of magnesium’s 8806 Å line (all spectra), as charted · 25 KB

JSON **j1328-numbers.json**
Every number the script computes · 7 KB

Run it

`python3 j1328_numbers.py` downloads about 15 MB into a folder of its own and runs in a few seconds; `python3 j1328_numbers.py <folder>` uses copies you already have there. It notes any file whose checksum differs from ours.

The data and their terms

The spectra are ESO’s pipeline-reduced X-shooter products, public since 2022 and 2024. ESO lets its data be passed on under CC BY 4.0, with credit and the files’ headers kept, and asks for the acknowledgement “Based on data obtained from the ESO Science Archive Facility” with the collection’s DOI [10]. This page hosts only values we derived from them; ESO’s animation and images, and Warwick’s illustration, are linked, not hosted [8][9].

10 · LIMITS

What this check could and couldn’t see

ESO’s reduction, not the authors’

We measured peaks in ESO’s pipeline spectra, without the telluric correction the authors made, on a running mean. We did not re-run their model of the rings, whose code is available on request, their atmosphere fit, whose code is not available, or their dust model [1 p. 5][1 p. 7][10].

A strength we had to infer

The paper states none; our 350–550 megapascals assumes the earlier study’s formula and depends on how its “size” is read [15] (section 9).

The episode unheard

No transcript was available, so we rate only the link’s label; none of the title’s phrases concerns this paper [2]. Our search for “phoenix planet” covered arXiv’s titles and abstracts, not the full texts in NASA’s Astrophysics Data System [23].

One star

This is a single system, and whether more gas discs than 21 have been found depends on candidates still unconfirmed, such as the 22 from a 2025 survey [22 Abstract].

What would change these verdicts

01

A periodic signal in the lines, like SDSS J1228+1040’s, or a transit, would show a body directly and move claim 3 from Unconfirmed to True [15].

02

A model in which a disc shadows itself into four peaks, or four peaks in another system that could not hold two bodies, would weaken claim 3 and make claim 2’s “two separate gaseous rings” Partly true, since the gas between them might only be in shadow [3 p. 3][3 p. 4].

03

The episode’s transcript: if it described the bodies as survivors, the phoenix would be a loose image for survival and claim 1 would be Partly true; if it described the candidate reborn planet of HS 0209+0832 while linking this system, claim 1 would be Misread.

Sources

Bracketed numbers refer to this list. For the paper [1], read in full, p. gives a page of the version-of-record PDF (the article on pp. 1–8, its Extended Data on pp. 9–13), Fig. a figure, ED Table and ED Fig. an Extended Data table and figure; its abstract is on p. 1. For its supplement [3], p. gives a page of its PDF, whose p. 1 is a cover sheet. For the authors’ manuscript hosted by ESO [4], l. gives its printed line numbers. For the episode [2] no transcript was available: we read its title and the links and labels in its description, and quote nothing else of it. For the other sources, p. gives a page and Abstract the abstract of the cited work; where only an abstract was read, the entry says so. R☉ is the Sun’s radius, 695,700 km; velocities are along our line of sight. Links checked October 31, 2026.

1 Gentile Fusillo, N. P., Lagos-Vilches, F., Gänsicke, B. T., Manser, C. J., and Koester, D. (2026). A double debris disc around a white dwarf sculpted by two planetary bodies. *Nature Astronomy*, published online October 26, 2026 (no volume or page numbers yet). Received February 16, accepted September 17, 2026. Peer reviewed; open access, CC BY 4.0. Its funding statement (p. 8) lists Italy’s “Rita Levi Montalcini” Programme of the Ministry of University and Research, the European Research Council under Horizon 2020 (grant agreement No. 101020057) and ANID FONDECYT Postdoctoral Grant No. 3250464; the authors declare no competing interests. Read in full: the version of record, as HTML and as a 13-page PDF (the article on pp. 1–8, its Extended Data on pp. 9–13), with its supplement (source 3). p. gives a page of that PDF, Fig. a figure, ED Table and ED Fig. an Extended Data table and figure. Its Fig. 3 is redrawn to scale in section 2; values read off its figures say so.

2 SpaceWeatherNews (S0) (October 31, 2026). Superflare Cycle 2030s, Cosmic Ghosts, Solar Impact | S0 News Oct.31.2026. YouTube video, https://www.youtube.com/watch?v=_8YfY0JF4Cc, published at 11:32 UT. No transcript was available when this page was made, so we read only its title and the five links in its description, with their labels, as our collector recorded them, and could not quote the episode’s own words. “Phoenix Planets” is its label on the link to ESO’s animation (source 8); “No Dark Energy”, “More Common Superflares” and “Solar Storms Impacting Surface” link the sources checked on our page on dark energy, on superflares and on the March 2026 storm; “Carina’s Ghost” links a Chandra image release. None of the title’s three phrases concerns this paper.

3 Gentile Fusillo, N. P., et al. (2026). Supplementary Information to source 1, “in the format provided by the authors and unedited”: the alternative explanations, the star’s parallax and photometry, the emission lines’ fluxes and peak separations, and the fits’ corner plots. A 10-page PDF, part of the open-access article. Read in full; p. gives a page of the PDF, whose p. 1 is a cover sheet.

4 Gentile Fusillo, N. P., Lagos-Vilches, F., Gänsicke, B. T., Manser, C. J., and Koester, D. (2026). A double debris disc around a white dwarf sculpted by two planetary bodies. The authors’ manuscript as hosted by ESO and linked from its release (source 7) as the research paper: a line-numbered PDF of 33 pages, created on August 7, 2026, by its file’s own record, before the paper’s acceptance on September 17, with no Extended Data and no supplement. Read in full; l. gives its printed line numbers.

5 Gentile Fusillo, N. P., et al. (2026). A double debris disc around a white dwarf sculpted by two planetary bodies. arXiv:2610.37773v1 [astro-ph.SR], submitted October 27, 2026, “accepted for publication in Nature Astronomy”; doi:10.48550/arXiv.2610.37773, CC BY 4.0. The accepted manuscript, 42 pages, with its Extended Data and supplement appended; compared with source 1 in the passages this page relies on.

6 Crossref. Metadata record for doi:10.1038/s41550-026-03004-3. Retrieved October 31, 2026: the received, accepted and published dates; the licence, CC BY 4.0 for the version of record from October 26, 2026; the abstract; and 51 references.

7 ESO (October 27, 2026). Dead star and planetary bodies: astronomers spot unique disc of debris that foretells Solar System’s future. Press release eso2613. Read in full. ESO’s press texts, images and videos are CC BY 4.0; this page quotes the text and links to the images.

8 ESO/L. Calçada (October 27, 2026). Animation of a debris disc around the white dwarf J1328–1450. Video eso2613b, 24 seconds, an artist’s impression, with its caption; the episode’s link. Caption read in full; the video is linked, not hosted.

9 University of Warwick (October 27, 2026). Astronomers spot unique double disc of debris that hints at Solar System’s future. Press release. Read in full; © University of Warwick, quoted only in a few words. Its second illustration, by Maria Cristina Fortuna and Nicola Gentile Fusillo, is CC BY-NC-SA 4.0 and is linked, not reproduced.

10 ESO Science Archive Facility. XSHOOTER echelle pipeline-reduced spectroscopic data, doi:10.18727/archive/71: the 11 public VIS-arm spectra of WDJ132800.85-145019.95 from programmes 105.20G8.001, 107.22RX.001 and 111.24T9.001, taken on May 15, June 28 and July 2, 2021, and May 12, 2023, downloaded on October 31, 2026, from ESO’s data portal, which serves public files without a login. Under ESO’s data access policy they may be passed on under CC BY 4.0 with credit and their headers kept. Based on data obtained from the ESO Science Archive Facility with DOI https://doi.org/10.18727/archive/71. Our analysis of them, with its script and outputs, is in section 9.

11 Williams, J. T., Gänsicke, B. T., Stone, N. C., Koester, D., Davies, B. D. R., Tong, C., Wilson, D. J., Sahu, S., Swan, A., Beatty, T. G., Ramirez, S. H., Cunningham, T., and Long, K. S. (2026). Discovery of a second-generation planet candidate accreting onto a white dwarf. *Nature Astronomy*, published online October 5, 2026. Peer reviewed; CC BY 4.0. Abstract read, from its Crossref record; its full text was searched for “phoenix”, which does not occur.

12 University of Warwick (2026). The phoenix planet: astronomers find a world reborn from its star’s ashes. Press release on source 11, which it accompanies; the page’s date line reads “05 October 2025”, but the paper is of October 5, 2026, and the page was last revised on October 8, 2026. Read in full; © University of Warwick, quoted only in its title.

13 Molar Candanosa, R., Johns Hopkins University (2024). Weird ‘Phoenix’ sheds light on how planets evolve. Futurity, June 14, 2024, republishing the university’s release under CC BY 4.0. Read in full.

14 Grunblatt, S. K., Saunders, N., Huber, D., et al. (2024). TESS Giants Transiting Giants. IV. A Low-density Hot Neptune Orbiting a Red Giant Star. *The Astronomical Journal* 168(1), 1. CC BY 4.0. Abstract only, from its Crossref record; it does not use the nickname.

15 Manser, C. J., Gänsicke, B. T., Eggl, S., et al. (2019). A planetesimal orbiting within the debris disc around a white dwarf star. *Science* 364(6435), 66–69. Read in the authors’ version, arXiv:1904.02163: the main text and sections 1–3 of the supplementary text, whose equation S16 gives the largest size of a body held together by its strength and whose section 3 relates that “size” to the body’s radius, at about 1.65 radii.

16 Manser, C. J., Gänsicke, B. T., Gentile Fusillo, N. P., et al. (2020). The frequency of gaseous debris discs around white dwarfs. *Monthly Notices of the Royal Astronomical Society* 493(2), 2127–2139. Abstract only (arXiv:2002.01936).

17 Gentile Fusillo, N. P., Manser, C. J., Gänsicke, B. T., et al. (2021). White dwarfs with planetary remnants in the era of Gaia – I. Six emission line systems. *Monthly Notices of the Royal Astronomical Society* 504(2), 2707–2726. Abstract only (arXiv:2010.13807).

18 Gänsicke, B. T., Marsh, T. R., Southworth, J., and Rebassa-Mansergas, A. (2006). A gaseous metal disk around a white dwarf. *Science* 314(5807), 1908–1910. Abstract only (arXiv:astro-ph/0612697).

19 Vanderburg, A., Rappaport, S. A., Xu, S., et al. (2020). A giant planet candidate transiting a white dwarf. *Nature* 585, 363–367. Abstract only (arXiv:2009.07282).

20 Schröder, K.-P., and Smith, R. C. (2008). Distant future of the Sun and Earth revisited. *Monthly Notices of the Royal Astronomical Society* 386(1), 155–163. Read in the authors’ version, arXiv:0801.4031: the introduction, Table 1 and sections 4–6.

21 Veras, D. (2021). Planetary Systems Around White Dwarfs. *Oxford Research Encyclopedia of Planetary Science*. Abstract only (arXiv:2106.06550).

22 Ma, Z., Zhang, X., Fang, T., et al. (2025). A Systematic Search for Gaseous Debris Disks in DESI Early Data Release White Dwarfs. *The Astronomical Journal* 170(6), 345, published November 24, 2025. Peer reviewed; CC BY 4.0. Abstract only, from its Crossref record (also arXiv:2510.25097).

23 arXiv. Search of titles and abstracts for “phoenix planet” and “phoenix planets”, October 31, 2026: no results. A wider search, of abstracts with “phoenix” and “planet” or “exoplanet” in the categories for planets and stars, returned 83 papers, all about the PHOENIX model atmospheres or the Phoenix spectrograph.

METHOD

How this was checked

On October 31, 2026, we checked every statement on this page about the paper against its full text, the version of record, with its Extended Data and its supplement [1][3]: the star’s parameters, the spectra and their dates, the model of the rings and its radii, tilt and brightness profiles, the peak separations, the magnesium test, the dust models, the abundances, the argument for two bodies and its size limits, the alternatives and caveats, and its statements on data, code, funding and competing interests. We compared it with the authors’ manuscript that ESO links, written before acceptance, and with the accepted manuscript on arXiv [4][5], and took its dates and licence from its Crossref record [6]. The page also rests on ESO’s release and animation page and the University of Warwick’s release [7][8][9]; the episode’s title and the links and labels in its description, since no transcript was available [2]; ESO’s 11 public pipeline-reduced spectra of the star and ESO’s terms [10]; the paper and the releases behind the “phoenix” nickname, and the paper on the planet nicknamed in 2024 [11][12][13][14]; eight other papers on white-dwarf debris, gas discs, a planetesimal and a planet around white dwarfs and the Sun’s future, two read in part in the authors’ versions and six as abstracts [15]–[22]; and a search of arXiv [23]: the 23 sources listed. Every quotation was checked word for word against its saved source.

The verdicts and the items tagged “Our analysis” are our own assessment, built on the cited sources. They include our co-adds of ESO’s spectra and the peaks, separations, radii, year-to-year comparison and magnesium test we measure in them; the ring edges in kilometres and the speeds at the ring edges; the densities a body without strength would need, from the classical limit for a fluid body; the tensile strength the paper’s size limits imply under the formula of Manser et al. (2019), and the limits at 10 megapascals; the values we read off the paper’s figures; and our reading of what the paper and the press releases do and do not say.

Our script, hosted on this page, fetches the 11 spectra from ESO’s data portal, checks them against the checksums we saw and recomputes every number we derive from them and from the paper’s printed values, among them the strengths behind the size limits under both readings of the formula’s “size” and the escape speed of the supplement’s example body; its outputs are hosted too [10]. We did not re-run the authors’ fits of the rings, whose code is available on request, of the star’s atmosphere, whose code is not available, or of the dust, nor correct the spectra for Earth’s atmosphere as they did [1 p. 5][1 p. 7]; our peaks come from a running mean of ESO’s pipeline products. The strength behind the paper’s size limits is not stated, so ours is an inference. The episode’s own words could not be checked. Before publication a fresh reviewer read the built page against its sources and re-ran our script, which reproduced its outputs byte for byte from ESO’s archive; the review’s findings were applied, as the change log says.

This page was researched and written with Claude, an AI assistant made by Anthropic, and then re-checked against its sources in a separate verification pass.

The verdicts on this page

MISLEADING	Contains something true but leaves a false impression, usually by leaving out key context.
OVERSTATED	Has some basis but claims much more than the evidence supports.
UNCONFIRMED	Rests on a preliminary result that hasn’t been confirmed.
PARTLY TRUE	Part of the claim holds up and part doesn’t.
TRUE	The evidence supports the claim.

All ten verdicts, and how we check

CORRECTIONS

Corrections and changes

If we get something wrong, we fix it and record the change below with the date. If a correction changes a verdict, the log says what the old verdict was.

Change log

Oct 31, 2026 Published on factchecked.science after a full check against the sources. Built from the paper’s full text and supplement, two earlier versions of it, ESO’s and the University of Warwick’s releases, the episode’s title and description (no transcript was available), the releases behind the “phoenix planet” nickname, the literature on white-dwarf debris and our own analysis of ESO’s 11 public spectra of the star, whose script and outputs are hosted on the page: six claims rated on the site’s scale, one the episode’s, two the paper’s and three ESO’s. The rings are drawn to scale after the paper’s Fig. 3; no ESO or Warwick image is hosted. Before publication a fresh review against the sources corrected the summary’s “four peaks in each emission line” (magnesium’s line has two), attributed the “very strong material” behind the size limits to our estimate rather than to the paper, which calls the strengths typical, and widened that estimate to 350–550 megapascals; recorded the DESI survey as a peer-reviewed paper; replaced the supplement’s escape speed of 1.4 m/s, which its own inputs do not give, with our arithmetic; and made claims 1, 4 and 5 fairer to ESO’s wording. No verdict changed.

Fact-Checked Science is independent. It isn’t affiliated with the channels, presenters or authors whose claims it checks.

Last updated Oct 31, 2026