

# AnimaScience

7 mars 2024

# Agenda

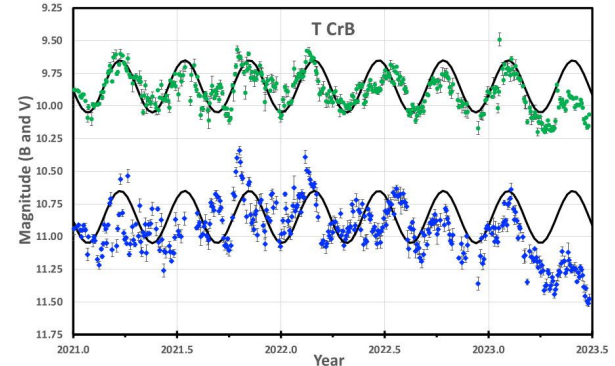
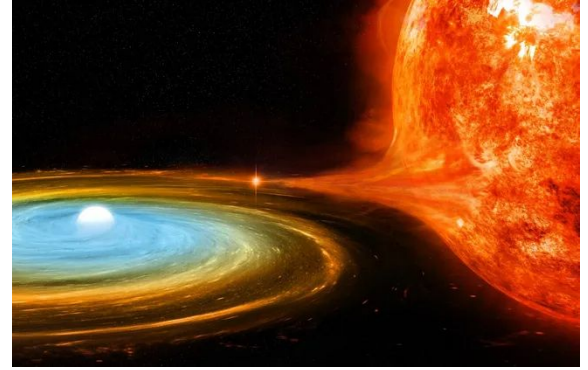
- Science news - Dominique - Narei - ...
- The end of total solar eclipses - Didier
- Hearing sound in quark-gluon plasma - Narei

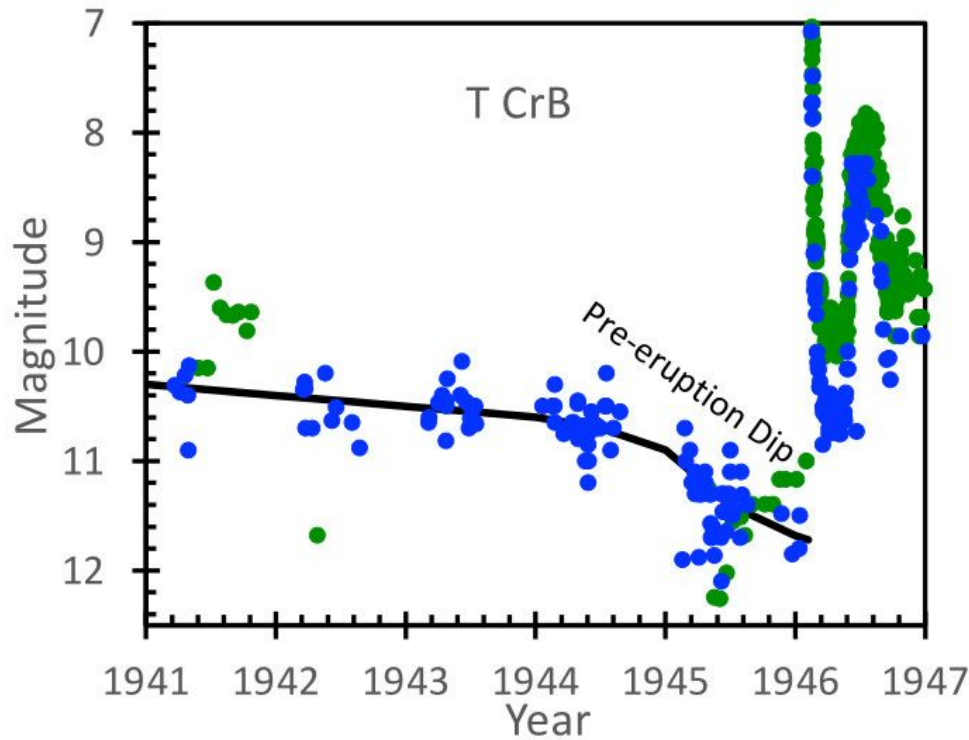
# A new visible star in Coronae Borealis soon ?

T Coronae Borealis ( T CrB) is a symbiotic recurrent nova with known eruptions in 1217, 1787, 1866 and 1946

Binary system composed of a Red Giant (cool) and a White Dwarf (hot)

- The white dwarf is accreting matter from the red giant (same process as for SNIa)
- When enough material is accreted the white dwarf might start a thermonuclear reaction ejecting material in space
- Sudden increase in magnitude
  - typically mag 10 to mag 2 for T CrB
- Before erupting the luminosity in both B and V bands decreases due to obscuration by dust



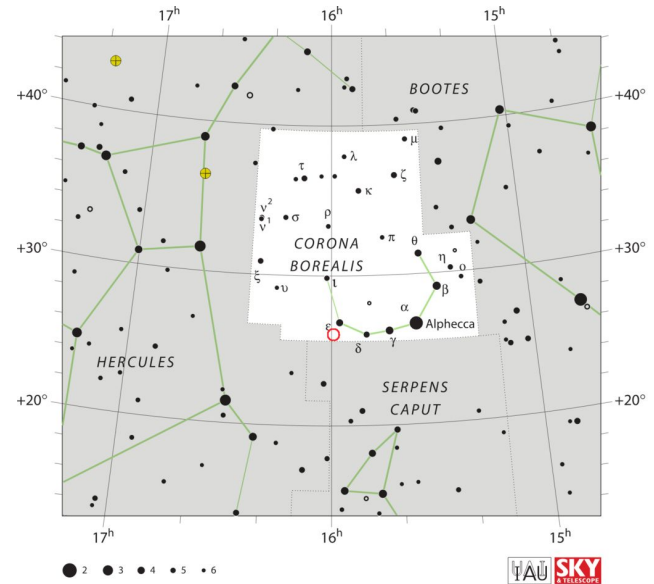


Expect eruption to start  $\sim 1.1 \pm 0.3$  years after the start of the Pre-eruption dip

⇒ T CrB is expected to erupt within the next 6 month

- Will stay at  $\sim$  magnitude 2 for a few days

- [https://blogs.nasa.gov/Watch\\_the\\_Skies/2024/02/27/view-nova-explosion-new-star-in-northern-crown/](https://blogs.nasa.gov/Watch_the_Skies/2024/02/27/view-nova-explosion-new-star-in-northern-crown/)
- <https://www.aavso.org/news/t-crb-pre-eruption-dip>
- [https://en.wikipedia.org/wiki/T\\_Coronae\\_Borealis](https://en.wikipedia.org/wiki/T_Coronae_Borealis)
- <https://arxiv.org/abs/0912.4426>
- <https://arxiv.org/abs/2308.13668>



"Eodem anno tempore autumpnali, hora vespertina post occasum solis in quadam stella in occidente visum est signum mirabile. Nam cum stella illa, posita versus austrum, aliquantulum declinans in occidentem, in directo sideris illius, quod vocant astrologi coronam Ariadnae, sicut nos ipsi annotavimus, antea erat parva et post ad parvitatem rediit, sed tunc maiori lumine refulsit, visusque est ab ea ascendere versus altitudinem firmamenti quidam radius valde clarus, quasi trabes magna et alta. Et hoc per multos dies, ut predictum est, tempore autumpnali sero visum est; post paulatim defecit et ad suam parvitatem stella rediit. Predicatores quoque his temporibus multa alia asserebant contigisse signa in celo et in terris, quae longum esset enumerare et huic brevitati annectere."<sup>41</sup>

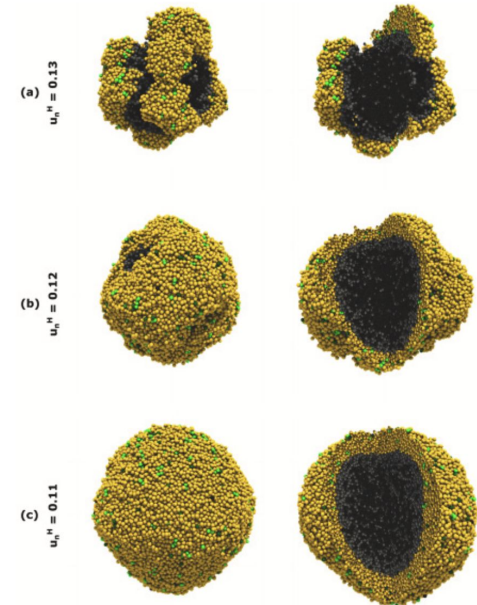
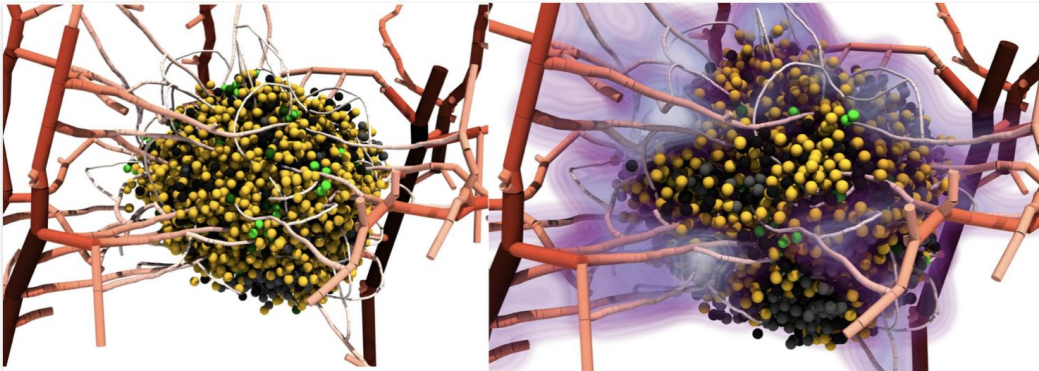
"In the autumn season of the same year [1217 AD], in the early evening, a wonderful sign was seen in a certain star in the west. This star was located a little west of south, in what astrologers call Ariadne's Crown [Corona Borealis]. As we ourselves observed, it was originally a faint star that for a time shone with great light, and then returned to its original faintness. There was also a very bright ray reaching up the sky, like a large tall beam. This was seen for many days that autumn. The preachers also in these times asserted that many other signs had taken place in heaven and on Earth, which it would be too long to enumerate and to add to this brief account."

# A simulation to battle the cancer: BioDynamo

Open source project, financed by CERN

Idea is to perform complex 3D simulation of cancer (evolution, effect of treatments), based on mathematical models

More infos: [link1](#), [link2](#)





# CERN robodog

Robot bought by CERN to act in radioactive environment (and do radioprotection) and messy environments (cable on the grounds, etc..)

-> robot with wheels are not usable

In a longer term, will be deployed in experiments caverns (check state of cavern, detect leaks, fire, etc...)

CERN will design their own robodog to be more specific to their use case

More details:

<https://home.cern/fr/news/news/engineering/introducing-cerns-robodog>

