

Magnetic Fields Dominate Young Stars of all Sizes? | Universe Today



- [Subscribe](#)
- [Podcast](#)

47908 readers
BY FEEDBURNER

- [Home](#)
- [Additional Resources](#)
- [Advertise](#)
- [Carnival of Space](#)
- [Contact Us](#)
- [Guide to Space](#)
- [Privacy Policy](#)
- [Forum](#)

[Magnetic Field Sensor](#)

Order Magnetic Sensors from Digikey Check Availability - Ship Same Day.
www.digikey.com

[Mobile Gas Flow Meter](#)

Flow and consumption measurement in gas and compressed air
www.cs-instruments.com

[Precision Magnetometers](#)

Metrolab: expert for high-precision and high-field magnetometers
www.metrolab.com

[Magnetic Fields](#)

Find business articles from leading publications and journals.
www.allbusiness.com

[Mobile Gas Flow Meter](#)

Flow and consumption measurement in gas and compressed air
www.cs-instruments.com

[Mars, The Stars & Planets](#)

Did the Universe from from - God? New Angle on a Tired Old Debate
CosmicFingerprints.com

Ads by Google

June 11th, 2009

[Magnetic Fields Dominate Young Stars of all Sizes?](#)

Written by [Anne Minard](#)

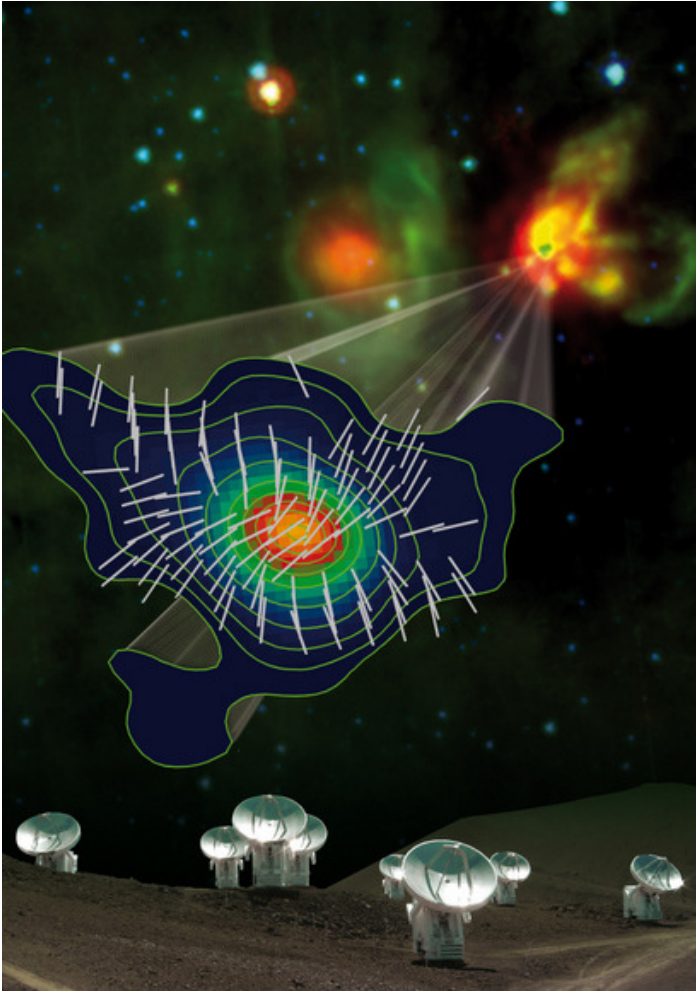


Image courtesy of Manel Carrillo, Josep Miquel Girart (CSIC-IEEC), Nimesh Patel (SMA), Spitzer

When it comes to the role of magnetism in the formation of [stars](#), size might not matter.

A team of researchers led by Josep Girart, of the Institut de Ciències de l'Espai (in Spain), studied the slow evolution of a dust cloud into a massive star, and realized that the cloud's magnetic field controls the star's development more than any other factor. They propose that the story is the same for small stars — an idea that could offer a new way to understand the formation of the early universe.

The new hypothesis is presented in this week's issue of the journal *Science*, and the lead image represents an artist's rendering of the concept.

The background shows a false-color Spitzer image of the massive star-forming region G31.41, with the colors indicating various wavelengths of light. The zoom-in region represents the dust emission from the massive hot core (color and contour image) superposed with bars showing the structure of the magnetic field.

Pictured in the bottom of the image is the Submillimeter Array in Hawaii, which was used for the observations.

The authors describe how the magnetic field at G31.41 has deformed the dust cloud into an hourglass shape — a telltale sign of magnetically controlled [star formation](#).

They say that this magnetic energy dominates over the other energies at play — e.g., centrifugal force and turbulence — and suggest that the role of the magnetic field in the early stages of star formation could be very similar for both small and [massive stars](#).

“The energetic relations do not differ too much” between massive and small stars, the authors write. “Both cores are collapsing because gravity has overcome pressure forces, but the

collapsing dynamics are controlled by the magnetic energy rather than by turbulence.”

Girart and his colleagues point out that this only holds true for forming stars; older massive stars are more influenced by radiation and ionization pressure, turbulence, and outflows than by magnetic fields.

Massive stars play a crucial role in the production of heavy elements and in the evolution of the interstellar medium, so this discovery might eventually lead to new insights about the formation of the early universe.

Source: [Science](#)

Filed under: [Astronomy](#)

Related stories on Universe Today

- [The Strongest Magnetic Fields in the Universe](#)
- [Ancient Galactic Magnetic Fields Stronger than Expected](#)
- [New Findings Challenge “Dynamo Effect” of Galactic Magnetic Fields](#)
- [Magnetic Fields Could Shape Nebulae](#)
- [Could Quark Stars Explain Magnetars Strong Magnetic Field?](#)

Comment policy: Be nice and brief. Don't advertise your stuff, or promote your personal theories. We'll delete any comments that break these policies. [Click here for more details.](#)

6 Responses to “Magnetic Fields Dominate Young Stars of all Sizes?”

1. *DrFlimmer* Says:

[June 11th, 2009 at 11:52 am](#)

It has been clear to the community for quite some time that star formation is influenced by magnetic fields.

I can go into the details if someone wishes, for now I don't have the time.

Just as an information for some of our fellows here. I guess they will appear soon....

2. *Lawrence B. Crowell* Says:

[June 11th, 2009 at 1:14 pm](#)

This one is a perfect curtain call for Anaconda to make another pitch!

3. *mgmirkin* Says:

[June 11th, 2009 at 2:16 pm](#)

Interesting...

4. *mgmirkin* Says:

[June 11th, 2009 at 2:26 pm](#)

So, from whence do these dominant magnetic fields originate? Currents of some form or function, I assume?

5. *IVAN3MAN* Says:

[June 11th, 2009 at 5:40 pm](#)

Lawrence B. Crowell:

This one is a perfect curtain call for Anaconda to make another pitch!

You mean like [this](#)?

6. *Jon Hanford Says:*

[June 11th, 2009 at 7:07 pm](#)

Yes, this is directly related to Astrofiend's 'dim matter' comment on another thread (although not as he intended it to be used) 😊

Leave a Reply

You must be [logged in](#) to post a comment.

« [YA Live Telescope Today: Messier 107 Kid's Astronomy - The Crow's Nest](#) »



•

• Categories

- [2012](#) (11)
- [Archive](#) (93)
- [Asteroids](#) (173)
- [Astrobiology](#) (64)
- [Astronomy](#) (1307)
- [Astronomy For Kids](#) (17)
- [Astrophotos](#) (203)
- [Astrosphere](#) (101)
- [Black Holes](#) (116)
- [Blog](#) (53)
- [Book Reviews](#) (192)
- [Carnival of Space](#) (51)
- [Chandra](#) (45)

- [China](#) (13)
- [Citizen Science](#) (3)
- [Comets](#) (45)
- [Constellation](#) (40)
- [Cosmology](#) (45)
- [Dark Energy](#) (18)
- [Dark Matter](#) (38)
- [Earth](#) (73)
- [Earth Observation](#) (242)
- [Eclipses](#) (14)
- [Enceladus](#) (2)
- [Environment](#) (49)
- [esa](#) (1)
- [Europa](#) (6)
- [Evolution](#) (5)
- [Extrasolar Planets](#) (209)
- [Extreme Life](#) (23)
- [Fraser's News](#) (2)
- [galaxies](#) (60)
- [Gamma Ray Bursts](#) (21)
- [Gravitational Lensing](#) (21)
- [Hubble](#) (224)
- [YA 2009](#) (28)
- [YA Live Telescope Library](#) (23)
- [James Webb](#) (4)
- [Jupiter](#) (70)
- [Mars](#) (714)
- [Mercury](#) (24)
- [Meteor Showers](#) (10)
- [Meteorites](#) (35)
- [Military](#) (14)
- [milky way](#) (4)
- [Missions](#) (370)
- [Moon](#) (166)
- [NASA](#) (244)
- [Neptune](#) (14)
- [Observatories](#) (107)
- [Observing](#) (91)
- [Orion](#) (6)
- [Physics](#) (92)
- [Planet News](#) (7)
- [Planetary Formation](#) (10)
- [Pluto](#) (40)
- [Podcasts](#) (183)
- [Questions](#) (8)
- [Satellites](#) (215)
- [Saturn](#) (431)
- [Science](#) (41)
- [SETI](#) (22)
- [Skywatching](#) (10)
- [Solar Astronomy](#) (60)
- [Solar System](#) (14)
- [Space Exploration](#) (143)
- [Space Flight](#) (165)
- [Space Shuttle](#) (286)
- [Space Station](#) (191)
- [Space Tourism](#) (37)
- [Spitzer](#) (25)
- [Sponsors](#) (1)
- [Technology](#) (1)
- [Telescope Reviews](#) (18)

- o [Titan](#) (22)
- o [Uncategorized](#) (10)
- o [Universe Today News](#) (4)
- o [Uranus](#) (5)
- o [Venus](#) (33)
- o [What's Up](#) (89)
- o [Where In the Universe?](#) (60)



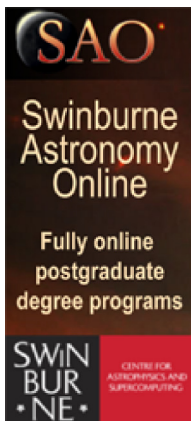
Web universetoday.com

• **Email newsletter**

Daily Edition
 Weekly Edition



Previously Recorded



• **Most Popular Articles**

- [One-Way, One-Person Trip to Mars](#)
- [Maximizing Survival Time Inside the Event Horizon of a Black Hole](#)
- [The Mars Landing Approach: Getting Large Payloads to the Surface of the Red Planet](#)
- [Why is Pluto Not a Planet?](#)
- [The Value of Space Exploration](#)
- [How Long Does it Take to get to the Moon?](#)
- [Building a Base on the Moon: Part 1 - Challenges and Hazards](#)
- [What is the Biggest Star in the Universe?](#)
- [Binoculars For Astronomy](#)
- [Name a Star](#)
- [No Domsday in 2012](#)

• Blogroll

- [Astronomy Cast](#)
- [Bad Astronomy](#)
- [Centauri Dreams](#)
- [Cosmic Log](#)
- [Kids Astronomy](#)
- [Nine Planets](#)
- [The Skeptics' Guide To The Universe](#)

[Universe Today](#)

 sitemeter