



# Cosmology/Astrophysics News

May 21, 2014

for Rose City Astronomers SIG

<http://101iq.com/RCA>

# Science – April 18, 2014

- An Earth-Sized Planet in the Habitable Zone of a Cool Star
  - [http://www.nasa.gov/sites/default/files/files/kepler186\\_main\\_final.pdf](http://www.nasa.gov/sites/default/files/files/kepler186_main_final.pdf)
  - <http://news.sciencemag.org/space/2014/04/almost-earth-tantalizes-astronomers-promise-worlds-come>
  - NASA's Kepler telescope's high accuracy enabled finding an Earth-like planet, 110% in size with a 130 day orbit in the Goldilocks zone around a red-dwarf star.
- KOI-3278: A Self-Lensing Binary Star System
  - <http://www.sciencemag.org/content/344/6181/275.abstract>
  - A sun like star with a white dwarf in orbit causes about 0.1% lensing effect, discovered with Kepler telescope.

# Nature – April 24, 2014

- Earth twin spotted in habitable zone
  - <http://go.nature.com/tmbgje>

# Science – April 25, 2014

- Saturn's New Friend
  - [http://www.sciencemagazinedigital.org/sciencemagazine/25\\_april\\_2014?pg=15#pg15](http://www.sciencemagazinedigital.org/sciencemagazine/25_april_2014?pg=15#pg15)
  - A new moon may be forming in the outer A ring of Saturn. Cassini will be moved to look closer “Peggy”
- Analyzing Moon Rocks
  - <http://www.sciencemag.org/content/344/6182/365.figures-only>
  - <http://www.sciencemag.org/content/344/6182/400.abstract>
  - Moon rocks may indicate internal water and other volatiles
- Detection of the Gravitational Lens Magnifying a Type Ia Supernova
  - <http://www.sciencemag.org/content/344/6182/396.abstract>
  - Lensed Ia supernova's may be useful in testing cosmic expansion

# Nature – May 1, 2014

- A new spin on exoplanets
  - <http://www.nature.com/nature/journal/v509/n7498/full/509041a.html>
  - <http://www.nature.com/nature/journal/v509/n7498/full/nature13253.html>
  - An exoplanet's ( $\beta$  Pictoris b) spin measured for the first time... may lead to understanding how planets usually spin in same direction as their orbit.

# Scientific American – May 2014

- Supersymmetry and the Crisis in Physics
  - <http://www.scientificamerican.com/article/supersymmetry-and-the-crisis-in-physics/>
  - No experimental evidence for supersymmetry has been found... no massive superpartner particles found...
- Our Inflated Universe
  - <http://www.nature.com/scientificamerican/journal/v310/n5/full/scientificamerican0514-14.html>
  - <http://www.scientificamerican.com/article/proof-that-the-universe-inflated-rapidly-after-the-big-bang/>
  - More on the background radiation findings about gravitational waves...

# Science – May 2, 2014

- Forming Terrestrial Planets

- <http://www.sciencemag.org/content/344/6183/479.summary>
- Mars's small mass may be explained by gap in solar nebula.

- Death of the Stars

- <http://www.sciencemag.org/content/344/6183/464.summary>
- Die off of star fish due to mysterious disease

- Solar Smoke Rings

- <http://www.sciencemag.org/content/344/6183/450.1.full>
- Study of solar corona at higher resolution



# Nature – May 8, 2014

- A Virtual Universe; A cosmic history; Properties of galaxies reproduced by a hydrodynamic simulation
  - <http://www.nature.com/nature/journal/v509/n7499/full/nature13316.html>
  - <http://www.nature.com/nature/journal/v509/n7499/full/509170a.html>
  - <http://www.nature.com/news/a-cosmic-history-1.15166>
  - 16 million hour computer simulation of baryonic matter shows cosmic history
- Circular polarization in the optical afterglow of GRB121024A
  - <http://www.nature.com/nature/journal/v509/n7499/full/nature13237.html>
  - Found unexpected circular polarization in afterglow of a gamma ray burst.



# Science – May 9, 2014

- Next Steps for Cosmology
  - <http://www.sciencemag.org/content/344/6184/586>
  - Discuss what to look for next after the background radiation polarization find.

# Nature – May 15, 2014

- NASA plans Mars sample-return rover
  - <http://www.nature.com/news/nasa-plans-mars-sample-return-rover-1.15207>
  - Narrowing down landing sites for 2020 mission
- First Light
  - <http://www.nature.com/news/cosmology-first-light-1.15213>
  - After CBR discovered 50 years ago, plan next steps
- Cepheid variables in the flared outer disk of our galaxy
  - <http://www.nature.com/nature/journal/v509/n7500/full/nature13246.html>
  - Young 130 million year old Cepheids found far from the galactic plane are a puzzle

# IEEE Spectrum May 2014

- The Hunt for the Invisible Axion
  - <http://www.sciencemag.org/content/344/6180/138.summary>
  - Team looking for dark matter... a strong magnetic field and a low noise amplifier could make axion dark matter produce microwave radiation