Cosmology/Astrophysics News

February 19, 2014

for Rose City Astronomers SIG

http://101iq.com/RCA

Nature – Feb. 13, 2014

- Cool start to hydrogen ionization
  - http://www.nature.com/nature/journal/v506/n7487/full/nature13051.html
  - Studying the heating of primordial hydrogen by x-rays from stars, galaxies, black holes… about 1 billion years after the big bang
- Cold dark matter heats up
  - http://www.nature.com/nature/journal/v506/n7487/full/nature12953.html
  - Significant outflow of gasses during galaxy formation might explain the distribution of dark matter

Science – Feb. 7, 2014

- China Build Mammoth Detector To Probe Mysteries of Neutrino Mass
  - https://www.sciencemag.org/content/343/6171/590.summary

  - Which neutrinos are heavier?... Are neutrinos their own antiparticle?...

Nature – Feb. 6 2014

- Hydrogen river could fuel stars
  - http://www.nature.com/nature/journal/v506/n7486/full/506008c.html
  - Discovered a “river” of hydrogen in intergalactic space connecting to NGC6946… future galaxy surveys might confirm if this is true or is drawn out from neighbors
- How big galaxies died fast
  - http://www.nature.com/nature/journal/v506/n7486/full/506009d.html
  - Giant galaxies burned out ~3 billion years after big bang due to intense star formation, using up all of the gas

Scientific American – Feb. 2014

- The Proton Radius Problem
  - http://www.scientificamerican.com/article/the-proton-radius-puzzle/
  - New measurement using muons shows proton to be 4% smaller (0.8409fm instead of 0.877fm) than expected… may lead to new science… more experiments planned

Nature – Jan. 30, 2014

- Supernova seen in nerby galaxy
  - http://www.nature.com/news/supernova-erupts-in-nearby-galaxy-1.14579
  - Type Ia supernova SN2014J in M82 (11.4 million light years away) in Ursa Major
- Stephen Hawking questions nature of black holes
  - http://www.nature.com/news/stephen-hawking-there-are-no-black-holes-1.14583
  - http://news.nationalgeographic.com/news/2014/01/140127-black-hole-stephen-hawking-firewall-space-astronomy/
  - Event horizon incompatible with quantum theory
- Solar System evolution from compositional mapping of the asteroid belt
  - http://www.nature.com/nature/journal/v505/n7485/full/nature12908.html
- A Global cloud map of the nearest known brown dwarf
  - http://www.nature.com/nature/journal/v505/n7485/full/nature12955.html

Science – Jan. 24, 2014

- Habitability, Taphonomy, and the Search for Organic Carbon on Mars
  - http://www.sciencemag.org/content/343/6169/386.full
  - A number of articles about the search for past life on Mars

Nature – Jan. 23, 2014

- Rosetta wakes up and phones home
  - http://blogs.nature.com/news/2014/01/rosetta-wakes-up-and-phones-home.html
  - http://www.nature.com/news/comet-craft-ready-to-wake-1.14509
  - Spacecraft to visit comet Churyumov-Gerasimenko, soft landing a probe in November
- Evaporating asteroid
  - http://www.nature.com/nature/journal/v505/n7484/full/505487a.html
  - Herschel Space Observatory shows Ceres spewing water from its surface

Science – Jan. 17, 2014

- Star-Crossing Planets Literally Strut Their Stuff
  - http://www.sciencemag.org/content/343/6168/240.summary
  - New method used to find many mini-Neptune size planets, smallest detected outside solar system
- Probing the Electron
  - http://www.sciencemag.org/content/343/6168/255.summary
  - http://www.sciencemag.org/content/343/6168/269.abstract
  - New experiment sets the upper bound of a possible electric dipole moment for an electron <8.7*10**-29 e-cm, predicted to be less than 10**-38 e-cm

Nature – Jan. 16, 2014

- Kepler clue to supernova puzzle
  - http://www.nature.com/news/kepler-clue-to-supernova-puzzle-1.14513
  - Latest findings suggest type 1a supernova come from merging white dwarfs
- The Heart of Darkness
  - http://www.nature.com/news/astrophysics-the-heart-of-darkness-1.14526
  - http://ngm.nationalgeographic.com/2014/03/black-holes/finkel-text
  - Spinning supermassive black holes, in about March all eyes on object G2 expected to merge with black hole Sagittarius A* at center of our galaxy, testing general relativity
- The Great Unseen
  - http://www.nature.com/nature/journal/v505/n7483/full/505290a.html
  - Hayden planetarium show visualizing dark matter distribution in universe
- Black hole found orbiting a fast rotator
  - http://www.nature.com/nature/journal/v505/n7483/full/505296a.html
  - Black hole found orbiting a fast rotating type Be star, accretion disk rotates too fast to feed black hole

Science – Jan. 10, 2014

- Rare Celestial Trio to Put Einstein's Theory to the Test
  - http://www.sciencemag.org/content/343/6167/126.summary
  - Strong equivalence principle (inertial mass = gravitational mass) to be tested with pulsar – 1.4 solar mass spins 266 times per second, with 0.2 and 0.41 solar mass white dwarves
- Transient Water Vapor at Europa's South Pole
  - http://www.sciencemag.org/content/343/6167/171.abstract
  - Water vapor appears irregularly probably due to changing surface stresses

Nature – Jan. 9, 2014

- Comets hint at cosmic encounter
  - http://www.nature.com/nature/journal/v505/n7482/full/505134a.html
  - Comet belt found around exoplanet and star: Fomalhaut A
- The rarity of dust in metal-poor galaxies
  - http://www.nature.com/nature/journal/v505/n7482/full/nature12765.html
  - Galaxies with redshift z>6 when universe less than billion years old rarely show dust from star formation

Science – Jan. 3, 2014

- An Exceptionally Bright Gamma-Ray Burst
  - http://www.sciencemag.org/content/343/6166/34.summary
  - Four papers about supernova GRB130427A… in a tiny galaxy in Leo detected April 27, 2013:
  - http://www.sciencemag.org/content/343/6166/38.abstract
  - http://www.sciencemag.org/content/343/6166/38.abstract
  - http://www.sciencemag.org/content/343/6166/48.abstract
  - http://www.sciencemag.org/content/343/6166/51.abstract

Nature – Jan. 2, 2014

- Chasing universes
  - http://www.nature.com/nature/journal/v505/n7481/full/505024a.html
  - http://www.amazon.com/Our-Mathematical-Universe-Ultimate-Reality/dp/0307599809
  - Review of Max Tegmark's book "Our Mathematical Universe: My Quest for the Ultimate Nature of Reality" – remarkably in tune with my paper:
  - http://www.101iq.com/universe.pdf
- Cloudy with a chance of dustballs
  - http://www.nature.com/nature/journal/v505/n7481/full/505031a.html
  - Investigating exoplanet atmospheres as they pass their stars plus findings for two planets GJ436b and GJ1214b:
  - http://www.nature.com/nature/journal/v505/n7481/full/nature12887.html
  - http://www.nature.com/nature/journal/v505/n7481/full/nature12888.html
- Strong neutrino cooling by cycles of electron capture and beta- decay in neutron star crusts
  - http://www.nature.com/nature/journal/v505/n7481/full/nature12757.html

Scientific American – Jan. 2014

- The Search for Life on Faraway Moons
  - http://www.nature.com/scientificamerican/journal/v310/n1/full/scientificamerican0114-38.html
  - Looking for habitable moons around exoplanets
- The Ultimate X-ray Machine
  - http://www.nature.com/scientificamerican/journal/v310/n1/full/scientificamerican0114-64.html
  - Stanford's Linac Coherent Light Source (LCLS) X-ray source is used to study exotic matter and take high speed images of molecules
- The Case Against Copernicus
  - http://www.nature.com/scientificamerican/journal/v310/n1/full/scientificamerican0114-72.html
  - Because diffraction of light was not yet understood, at that time science supported the case that Copernicus must not be correct