



COMPUTATIONAL ASTRO @COLUMBIA

Greg Bryan

Shy Genel

Andrew Emerick

Computational Resources

- Yeti: Shared HPC Cluster
 - 2700 cores/167 nodes (64 infiniband nodes, 10 GPU nodes)
 - 10+ departments, current astro share: 5%
 - hardware purchased by departments, support from CU
 - Cloud computing pilot project in works
- Data Science Institute
 - 9 schools, 150 affiliated faculty
 - “The Institute has a mandate to hire new faculty, to attract interdisciplinary graduate students interested in problems related to big data and data-driven approaches, and to build strong and mutually beneficial relationships with industry partners.”

Columbia: Greg Bryan

- Research Interests: galaxy clusters, structure formation, galaxy formation, first stars/black-holes
- Codes: Enzo, yt
- Ricardo Fernandez (grad): High-redshift star formation
- Munier Salem (grad): Cosmic-rays in galaxies/LMC
- Miao Li (grad): ISM simulations [w/ JPO]
- Jingjing Chen (grad): dwarf galaxies
- Enzo workshop Sept 28-Oct 1 (NCSA, Illinois)

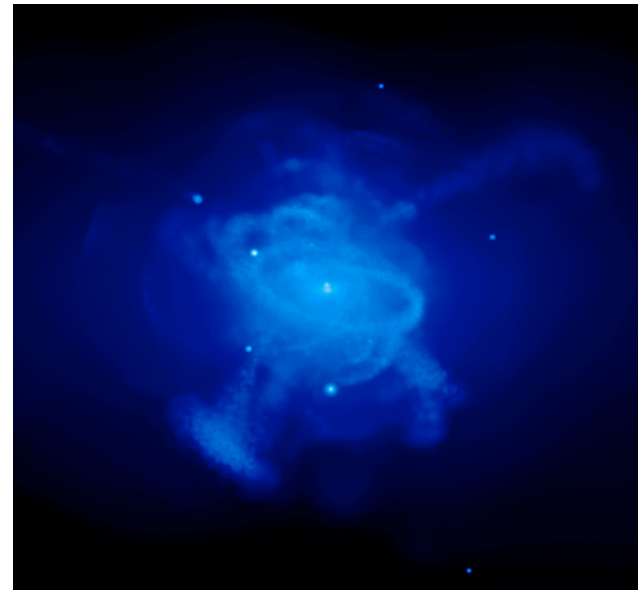


Columbia: Shy Genel

- (See Shy's talk)

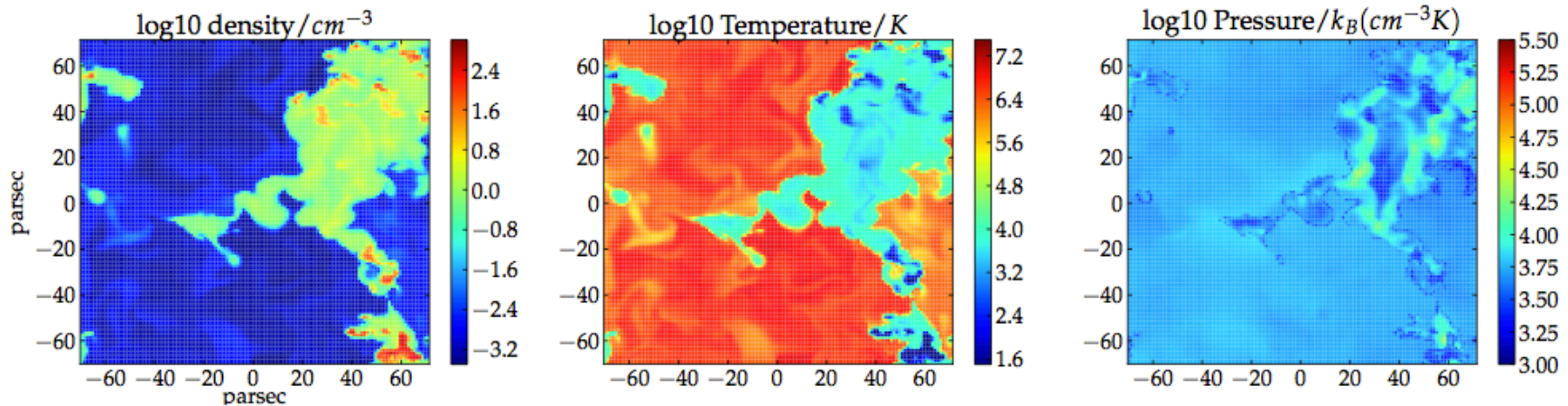
Columbia: Kathryn Johnston

- Research interests: galactic dynamics, galactic archeology, Milky way structure
- Codes: SCF (N-body), Rewinder, Enzo
- Lauren Corlies (enrichment signatures)
- Adrian Price-Whelan
(dark matter halo probes, dynamics) + astropy!



Columbia: Jeremiah Ostriker

- Research interests: varied!
- Codes: TVD, TPM, Enzo
- Miao Li (grad): ISM



Columbia: other computational researchers

- Chervin Laporte (Simons Fellow)
 - N-body, Dark matter/galactic dynamics
- Kohei Inayoshi (JPS Fellow)
 - ZEUS, Enzo, high-z gas chemistry+dynamics
- Eli Visbal (Columbia Prize Fellow)
 - N-body, high-z structure formation
- Andreas Küpper (Hubble Fellow)
 - N-body, gravitational dynamics
- Robyn Sanderson (Hubble Fellow)
 - Galaxy formation
- Colin Hill (Simons Fellow)
 - CMB data analysis

Columbia: Mary Putman

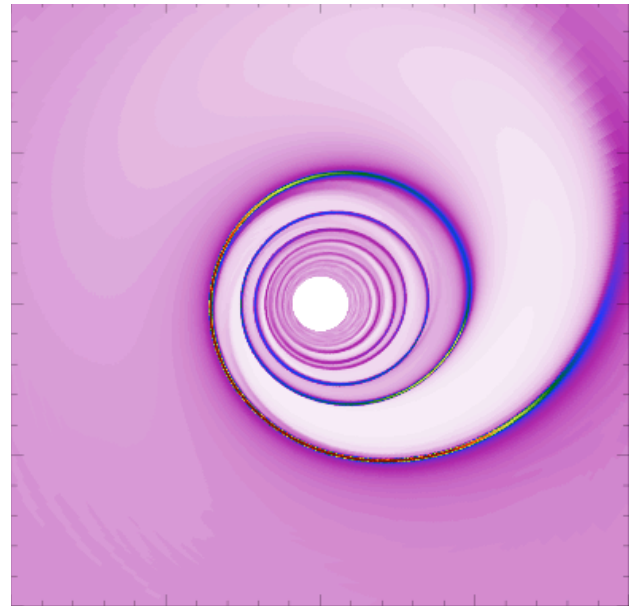
- Research interests: baryon content and flows in galaxies, Milky Way structure
- Yong Zheng (grad): gas content of Milky Way
- Susan Clark (grad): magnetic fields in ISM (w/ Jeff Oishi)

Columbia: David Schiminovich

- Research interests: UV observations (GALEX), galaxy formation and evolution, Cosmic web
- Lauren Corlies (grad): UV line emission from CGM

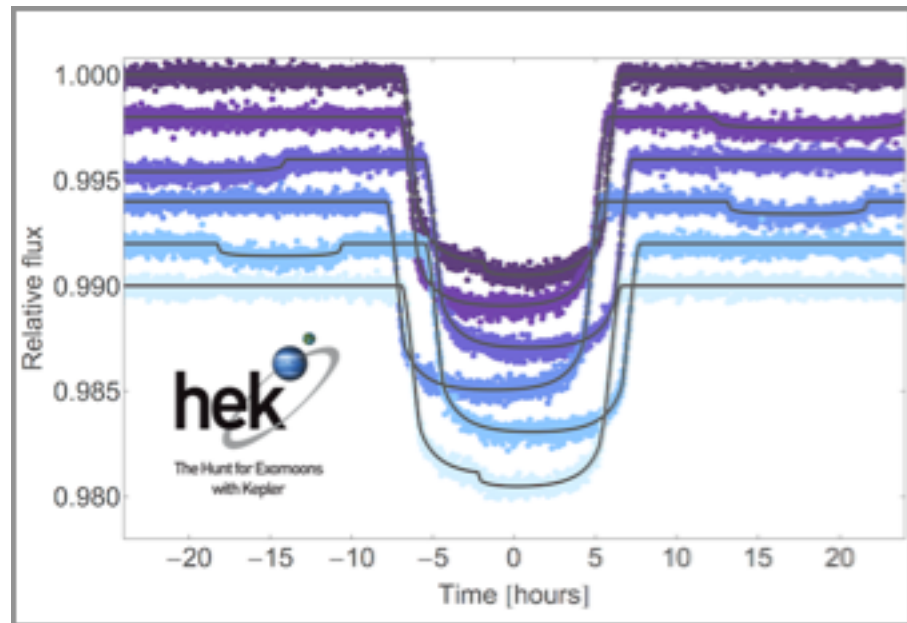
Columbia: Zoltan Haiman

- Research Interests: black holes/AGN, first stars, weak lensing, clusters
- Codes: FLASH/DISCO, Gadget
- Dan D'Orazio (grad): BH binaries
- Jia Liu (grad): weak lensing
 - (with Lam Hui)
- Andrea Petri (grad): lensing



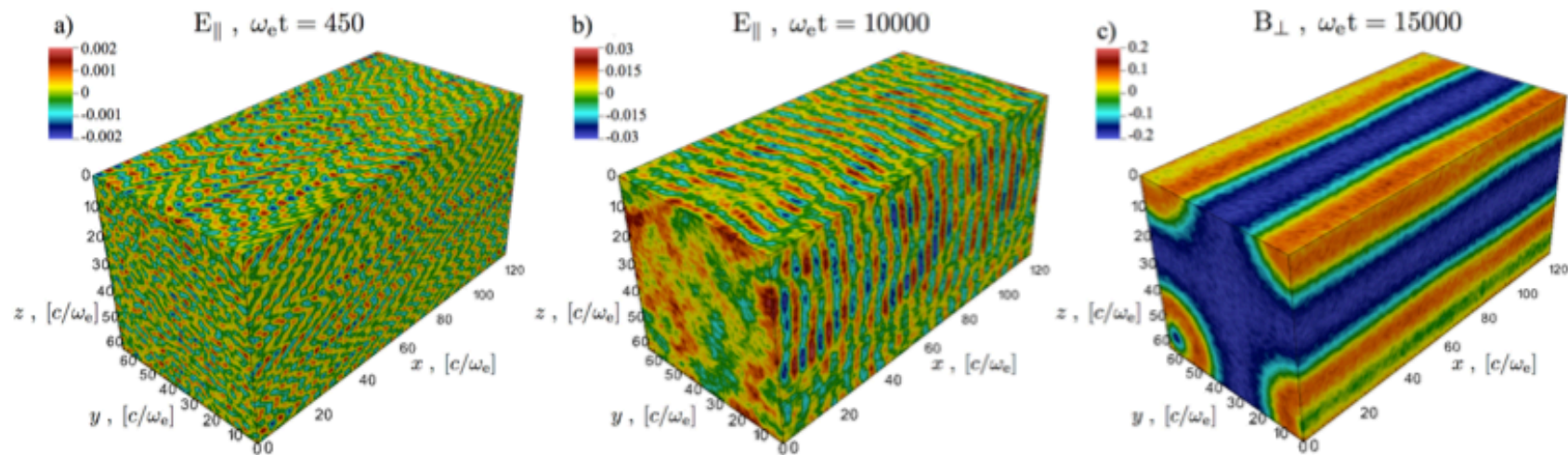
Columbia: David Kipping (Fall 2015)

- Research Interests: exomoons and exoplanets
- Codes: LUNA, MACULA



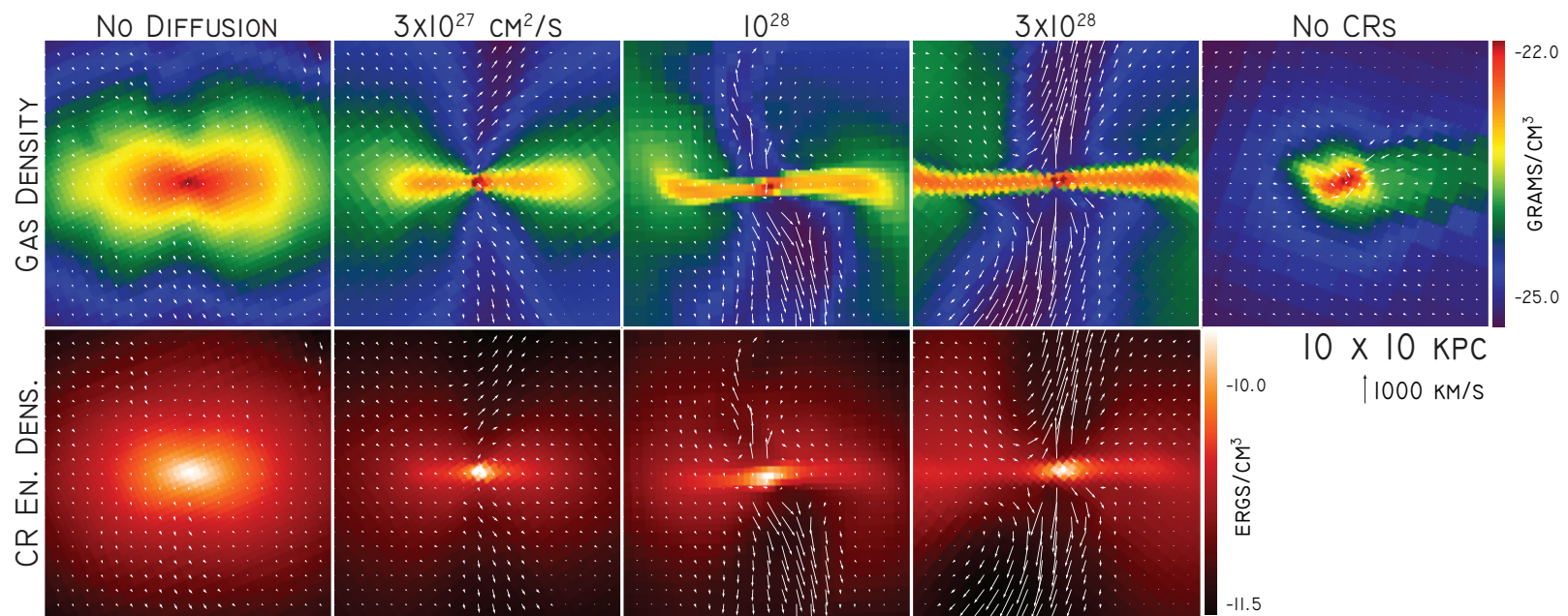
Columbia: Lorenzo Sironi (Fall 2016)

- Research Interests: collisionless shocks, particle acceleration, plasma instabilities
- Codes: TRISTAN-MP (PIC)



GB Example application

- Cosmic-ray pressure in galaxies (Munier Salem)



GB Example application: CRs

