NOTES: Major subfields in astronomy

List of Columbia faculty that do astro research: https://www.astro.columbia.edu/content/faculty
Names included on the list below (in italics) are *active* research faculty.

- Stellar astrophysics
  - Star clusters: ages, formation, evolution
  - Star formation/interstellar medium
    - *Mordecai Mac-Low (AMNH)*
  - Stellar rotation
    - *Marcel Agüeros*
    - *Ruth Angus (AMNH)*
  - Asteroseismology (internal structure)
  - Binaries: evolution, mass transfer
    - *Michael Shara (AMNH)*
  - End stages: white dwarfs, neutron stars, black holes
    - *Frits Paerels*
    - *Yuri Levin*
    - *Brian Metzger*
    - *Andrei Beloborodov*
  - Transients: stellar explosions
    - *Kishalay De*
- Galactic astrophysics
  - Stellar streams (e.g. as probes of dark matter halos or past mergers)
    - *Kathryn Johnston*
  - Center of the galaxy (Sgr A*)
  - Chemical evolution
  - Interstellar medium/circumgalactic medium/magnetic fields/cosmic rays
    - *Mary Putman*
    - *Greg Bryan*
    - *David Schiminovich*
- Extragalactic astrophysics
  - Supermassive black holes: evolution, masses
  - Active galactic nuclei (including effects of galaxy clusters)
  - Star formation (quenching problem)
  - Interstellar/circumgalactic/intergalactic medium
    - *David Schiminovich*
  - Dwarf galaxies
  - Galaxy mergers
- Exoplanets
  - Detection methods: RVs, transit, astrometry, lensing, direct imaging
  - Atmospheres
  - Demographics
    - *David Kipping*

    - Protoplanetary disks (early stages of formation)
        - *Jane Huang*
- Cosmology
    - Hubble tension and standard candles
    - Structure formation
        - *Greg Bryan*
    - Dark energy
    - Gravitational wave sources
        - *Szabolcs Marka*
        - *Janna Levin*
    - Big Bang
        - *Lam Hui*
    - Cosmic microwave background
        - *Colin Hill*
- High energy
    - Origin of the elements
    - Astrophysical plasmas (solar to galaxy clusters)
        - *Lorenzo Sironi*
    - Pulsars, FRBs, X-ray binaries
        - *Brian Metzger*
        - *Andrei Beloborodov*
        - *Frits Paerels*
        - *Yuri Levin*
- Particle
    - Neutrinos: solar, extragalactic (Ice Cube)
    - Cosmic rays: composition, spectrum, sources
        - *Reshmi Mukherjee*
        - *Chuck Hailey*
        - *Angela Olinto (provost)*
- Laboratory astro
    - Line energies
    - Reaction cross-sections
    - Ices and dust grains
- Instrumentation
    - Space-based
        - *Chuck Hailey*
        - *Kerstin Perez*
        - *Angela Olinto (provost)*
    - Ground-based: telescopes, detectors for dark matter/neutrinos/etc
        - *David Schiminovich*
        - *Kishalay De*
        - *Rebecca Oppenheimer (AMNH)*
        - *Elena Aprile*