Science and Career Opportunities at Gemini

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Gemini Observatory
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Who we are

- Science Operation Staff at Gemini N/S
  - 3 Astronomers, 5 Scientists, 3 (+1) Fellows
  - 10 Science Operation Specialists
  - Based in La Serena, Chile and Hilo, HI
<table>
<thead>
<tr>
<th>Astronomer</th>
<th>Scientist</th>
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<tbody>
<tr>
<td>Tenure track</td>
<td>Parallel track</td>
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<tr>
<td>50/50 position</td>
<td>70/30 position</td>
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<tr>
<td>50% Functional Duty + 50% Research</td>
<td>70% Functional Duty + 30% Research</td>
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**Functional Duties**

- Night Time Observation: Queue observations
- User Support: Contact Scientists (Phase II checks and program follow-ups)
- Queue Coordination: Making nightly queue plans
- Instrument Support: commissioning, monitoring, back-on-sky checks, HelpDesk support
Science Operation Specialist (SOS)

- Telescope operations and 75% of night time observations
- Daytime data checks and instrument calibrations/checks
- Mask design check support and engineering tasks
Staff Science projects

• Research Fields  (http://www.gemini.edu/sciops/gemini-research-staff)
  • Solar System and Exoplanets
    • Main-belt comets, KBOs, various Solar System bodies, low mass stars for exoplanet search, parallax, high-precision astrometry, extrasolar planetary debris
  • Stellar Astrophysics
    • Brown dwarf, white dwarf, binary star evolution, massive star formation and evolution, variable stars, supernovae, LBVs, stellar archaeology, IMFs
  • Galactic Astronomy
    • Galactic star clusters, multiple stellar populations, OB associations, ultracompact HII regions, clusters in LMC and SMC
  • Extragalactic Astronomy
    • Evolution of galaxies and their SMBHs, AGN feedbacks, star clusters in nearby galaxies and dwarf galaxies, distribution of dark matter in galaxies
• Cycle 21 HST Treasury Program (154 primary + 154 parallel)
• WFC3+ACS in NUV, U, B, V, I (+Hα; Cycle 22 program)
• 50 star-forming galaxies (D=3.5-12/18 Mpc)
• Science goals
  • Quantify how clustering of star formation evolves
  • Discriminate among models of star cluster evolution
  • investigate effects of SFH on UV SFR measurements
  • explore impacts of environments on SF and cluster evolution

• We visually inspect cluster candidates and assign morphological classes
  • ~15,000 cluster candidates (31 out of 50 galaxies) are inspected
  • ML classifications are available for ~5 galaxies
• > 50% of cluster candidates are Class 1 and 2 (left).
• More than 30% of sources in the high-fidelity catalogs are contaminants.
• Cumulative luminosity functions with Class 1 and 2 sources follow a power-law function \( \frac{dN}{dL} \propto L^{-\beta} \) with slopes close to 2.

Kim et al. in preparation
Work done by my intern

• Lauren Kahre (NMSU graduate student)

• “Extinction Maps and dust-to-gas Ratios in Nearby Galaxies with LEGUS” (arXiv: 1802.06915)

• Power-law relationship between the DTG ratio and metallicity in 5 star forming spiral and dwarf galaxies
Little bit of “Fun” I had last Summer

• GW170817 was triggered during my QC shift
• Became a contact scientist to several key programs.
  • GROWTH (Global Relay of Observatories Watching Transients Happen) network team
• Invited to be co-authors on two papers
  • “Illuminating Gravitational Waves”
    http://science.sciencemag.org/content/358/6370/1559/tab-pdf
  • “Multi-messenger observations of a binary neutron star merger”

The image sequence from Flamingos-2 for a period of over two weeks.
Gemini Science Fellow Program

• 3-year fixed term position
• 50% Functional Duty + 50% Research
• Two positions are open every year, one in Hilo and one in La Serena
• Actively involved with the instrument teams, Public Outreach, and/or Fast Turnaround Program
• No guaranteed telescope time
  ➢ Highly successful in the Director’s Discretionary Time (DDT) and Fast Turnaround (FT) Programs
• Application Deadline: early November
Internship Programs

• Science/Engineering/Technical/Public Outreach
  • Part-time/full-time and paid/non-paid (up to ~6months)
  • For both undergraduate and graduate students
  • Various programs with Canadian institutes and Chilean institutes
  • Fulbright Scholar programs are available in Chile

• Research Interns
  1. Mentor applying for funding with specific project ideas
  2. Search for interns: advertised on AAS job register site
  3. Review applications and select
  4. Send notification to the selected applicants

• Or simply contact Science Staff with your research interest!!
Be part of Gemini Observatory!!