Einstein Postdoctoral Fellowship Program

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Inspired as usual by impending deadlines, I took a batch of Annual Reports recently submitted by current Einstein Fellows, and made the accompanying Wordle. 'Year', 'will, and 'can' are the top three words, which makes sense given the indomitable spirit and prodigious annual productivity of this tough gang of astrophysicists. I chose a coffee mug shape to represent the wordle, since caffeine likely plays a significant role in stimulating their research. Curiously, scrutiny of the next three most common words in the wordle hints at an emerging field of ominous 'black data simulations'.

2016 Selection Panel

The Einstein Postdoctoral Fellowship selection panel, recruited each year, works hard to select amongst an impressive crop of applicants, many of whom could code and run a suite of 3D-MHD black data simulations of your grandmother before lunch. After reviewing 163 applications, a panel of 13 reviewers met at the CfA in mid-January 2016. Spirited discussions informed the grading process for our initial "discuss list" of 43 applications. Despite encouragement to use the full spread of grades (from 1 to 5) for post-discussion re-grading, most of those 43 applications emerged with grades above four, spawning discussion of ranking to the second decimal place. Our creative Chair even suggested it psychologically advisable to simply strip the integers so that e.g., a 4.7 becomes a 7. Anyway, by the end, we had a "short list" of 22 that the panel thought was both well-chosen and well-balanced. We began making offers the next day, amidst considerable host

juggling (only one new Einstein Fellow may be posted to any institution). By Feb 15, we had 6 people decline, and 13 accept. By the end of 2016, these new Einstein Fellows will have fanned out to (you guessed it!) 13 institutions across the country to begin up to three years of research relevant to NASA missions in high energy or gravitational astrophysics, or cosmology.

You can see the fresh crop of 2016 Einstein Fellows and read about the research at http://cxc.harvard.edu/fellowslist.html.

Alumni Mentors Program

We have reached out to former Einstein and *Chandra* Fellows to create a network of alumni mentors. Current Einstein Fellows are encouraged to connect with any of the 20 alumni who have so far volunteered. The list of mentors will continue to grow but already represents a strong diversity of sub-fields of astrophysics and post-fellowship trajectories including staff research, faculty and private sector positions.

Highlights from Current Fellows

There are highlights too numerous to mention from current Einstein Fellows, but I've chosen a sampler to go with your coffee.

All three finalists for this year's American Physical Society Division of Astrophysics Thesis Award were Einstein Fellows! Blakesley Burkhart (New Frontiers for Diagnosing the Turbulent Nature of the Multiphase Magnetized Interstellar Medium), Liang Dai (Primordial Perturbations in the Early Universe: Theory, Detection, and Implication for Inflation) and Wen-fai Fong (Unveiling the Progenitors of Short Gamma-ray Bursts) presented results at the APS meeting on April 17 in Salt Lake City and Wen-fai Fong was chosen as the winner. Speaking of theses, Maria Petropolou received the Mobilising European Research in Astrophysics and Cosmology (MERAC) prize, awarded by the European Astronomical Society for Best Doctoral Thesis Prize in Theoretical Astrophysics. Congratulations to all!

Using integral ratio (3:2) harmonic X-ray quasi-periodic oscillations, Dheeraj Pasham led a team that published a reliable mass measurement for NGC 1313 X-1, an intermediate-mass black hole of about 5,000 solar masses (press release at https://cmns.umd.edu/news-events/features/3245).

Alexander Tchekovskoy and Nick Stone won an NSF award of 10 million GPU hours (1 billion CPU core hours) over a period of 2 years on the Blue Waters

supercomputer at the National Center for Supercomputing Applications in Urbana-Champaign.

Justin A. Ellis and Rutger van Haasteren co-authored a study on the prospects of gravitational-wave detection with pulsar timing arrays. They conclude that, even in pessimistic cosmological scenarios where a significant fraction of supermassive black-hole binaries stall, pulsar timing arrays can expect to detect a stochastic background of gravitational waves within the next decade. (Press release: http://www.jpl.nasa.gov/news/news.php?feature=5505)

Simeon Bird and collaborators published a paper asking whether primordial black holes—contenders for a significant portion of dark matter in the universe—could have produced the detected LIGO event.

2016 Einstein Fellows Symposium

All are invited to attend the 2016 Einstein Fellows Symposium, Oct 18-19 here at the CfA, or watch it live via webcast. The program should be posted soon at http://cxc.harvard.edu/fellows/program_2016.html. There is a finite chance that among the results presented, you might find a 3D-MHD black data simulation of your grandmother. •