S. R. Kulkarni

Principal Investigator, Zwicky Transient Facility

George Ellery Hale Professor of Astronomy & Planetary Sciences

On-going projects

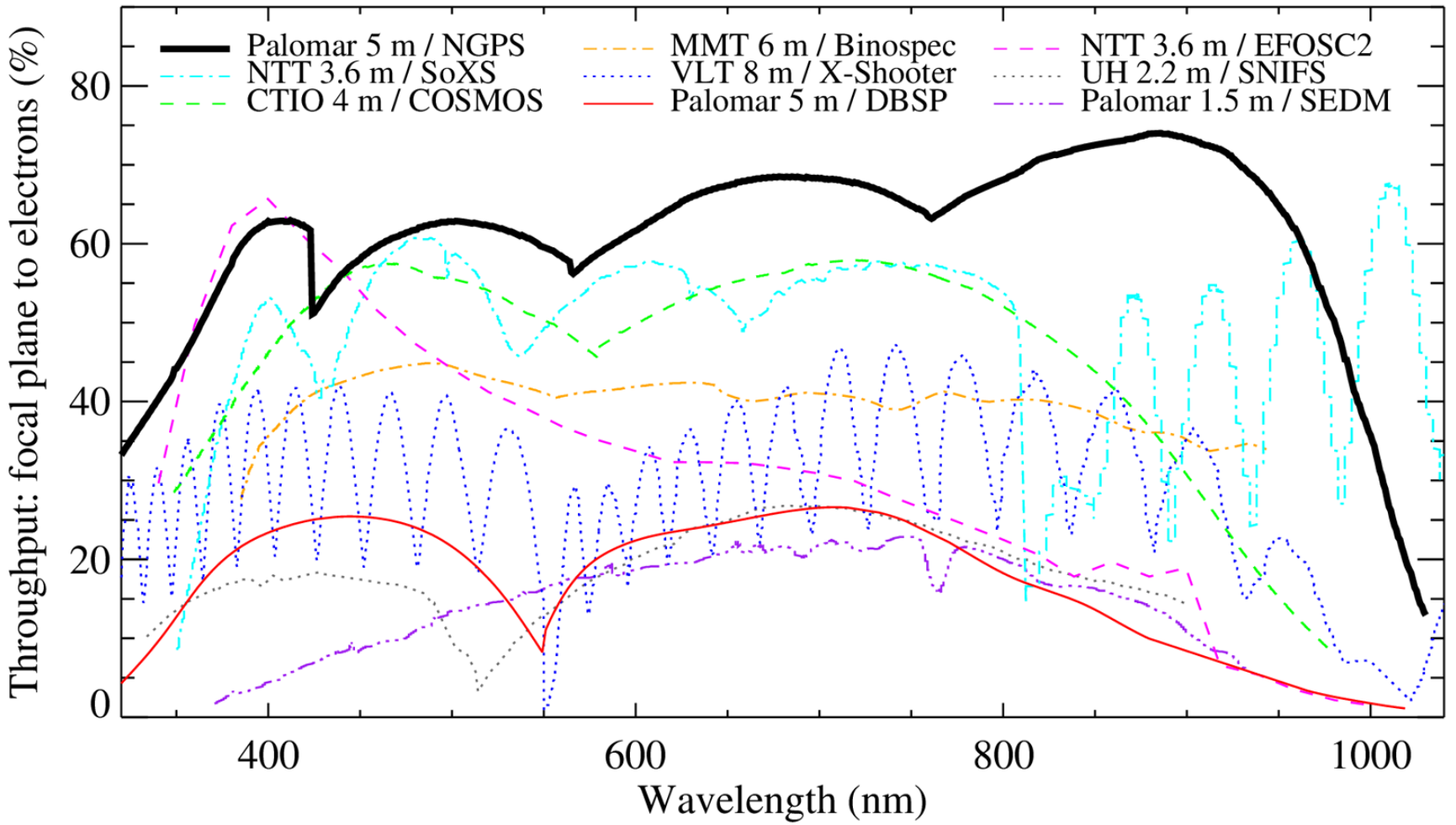
- Yashvi SHARMA, 5th year student
  - Commissioning an IFU spectrometer (SEDMv2) at the near-robotic Kitt Peak 84-inch telescope
- Antonio RODRIGUEZ, 4th year student
  - Investigation of magnetized white dwarfs using eROSITA X-ray survey (SRG mission) and ZTF
- Soumyadeep BHATTACHARYA, 1st year project student
  - Searching for planetary nebulae & other nebulae in PTF 4-bandH-alpha survey
- Zhaoyu HUAI, 1st year Physics student project
  - Galactic Radio Explorer (GREX)
  - Exploration of the sub-millisecond of the radio sky in 1-2 GHz band

Projects going forward

- NASA selected Caltech-led project ”Ultraviolet Explorer” (UVEX) for construction & launch (in 2030)
  - Will undertake sensitive FUV & NUV imaging of the sky (including transients)
  - Carried a low-resolution spectrometer (comparable to equivalent Hubble COS)
  - Lots of projects available to students (talk to Harrison, Kasliwal, Kulkarni, Martin, Phinney)
- Z-Shooter: the world’s most sensitive single-object spectrometer
  - Lots of projects involving instrumentation and testing
  - Faculty: Kulkarni, Kasliwal, El-Badry

Z-Shooter

- X-Shooter (ESO)
- NGPS (Palomar)



SRK's own projects (students welcome to join)

- Investigation of fine structure in the Warm Ionized Medium of our Galaxy using JWST MIRI-Medium Resolution Spectrometer
- Physical modeling cometary ionized nebulae of fast-moving stars, specifically the nearest magnetar
  - This is a fun theoretical project with wide use of atomic physics
  - Hypothesis: these thin trails are the source of ISS "parabolic arcs"
  - advisor: Prof. Bruce Draine, Princeton University
- Modeling all process related to astrophysical positrons from flight to annihilation by semi-analytical formulae and using the framework to compute the line width of electron-positron annihilation line
  - advisor: Prof. Ira Wasserman, Cornell University
  - In anticipation of the launch of COSI (2026).