Advances in spectroscopy and implications for stellar research

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1. Planets and stars

- The search for and study of exoplanets has completely revitalized stellar astrophysics.
  - Planet signatures are subtle, so we need to understand stars better.
  - The searches produce mountains of extremely high-quality observations.
    - Much of this is archived.

1. Planets and stars

- The tools for planet searches are versatile:
  - The next generation of spectrographs seeks precision of 10 cm/s.
  - Realistic precision for binary stars is not that good given stellar properties and limited S/N, but still well advanced from the recent past.
  - See Richard Andersen talk in Friday Division G session on a low-mass companion to delta Ceph.
  - The implications for studying binaries are obvious.

1. Planets and stars

- The tools for planet searches are versatile:
  - The exoplanet community is using advanced statistical tools to get the signal from the observations.
    - Bayesian methods and Gaussian processes.
    - Google “eprv”

2. The joys of photometry

- Kepler:
  - Long-period EBs revealed in extended, unbiased surveys
  - Kepler photometry reveals binary companions through phase shifts in pulsations
- Gaia, TESS, WFIRST, etc.:
  - Many new EBs to extend the range of parameter space explored

3. Spectroscopy in the IAU

- Commission 29, Stellar Spectra, goes away this Friday. There is no new spectroscopy commission.
- Spectroscopy as a technique includes nearly all areas of astrophysics, and so a cross-divisional proposal was submitted but was not approved.
  - It included the old commissions on radial velocities and spectral types.

3. Spectroscopy in the IAU

- Significant aspects of stellar spectroscopy are included in the new G3 commission on Stellar and Planetary Atmospheres.
- But RVs do not have a home; possibly a Division G Working Group.

4. Other IAU stuff

- From Friday's Div. G meeting:
  - Desire to be able to join >3 commissions.
  - Need for star formation WG.