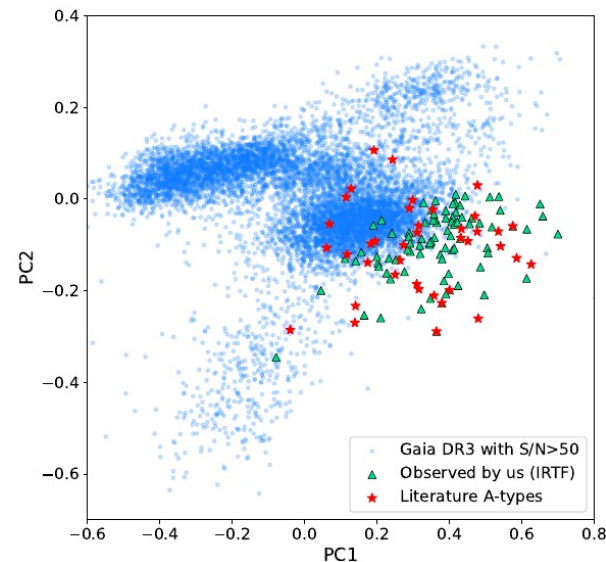
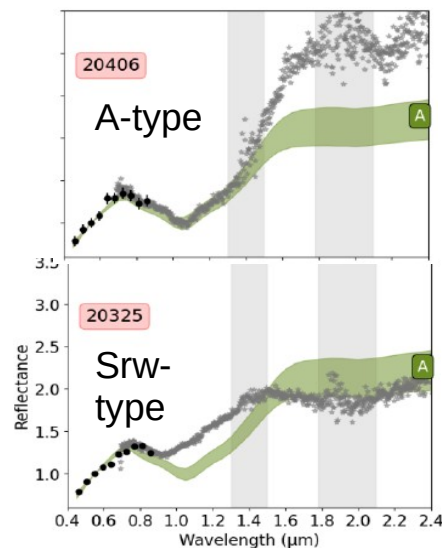


The Abundance of A-type Main-Belt Asteroids

Internal heat may lead to layered asteroid structure (“differentiation”) with a mantle made of igneous silicates (e.g., olivine).

- Olivine-rich (A-type) asteroids trace this asteroid heating model.
- Previous work: A-type only 0.16% of all asteroids...the “missing mantle problem”
- Gaia enables visible light classification of ~60,000 asteroids: PCA analysis
- **SpeX-Prism** spectra: ~100 A-type asteroids.
- Gaia+SpeX: A-type asteroids 2.00+/-0.15% of asteroid population in Main Belt



- Some colloidal families have even higher A-type abundances (e.g., Flora, Vesta), consistent with near-earth asteroids
- Core/mantle differentiation more common than previously estimated!