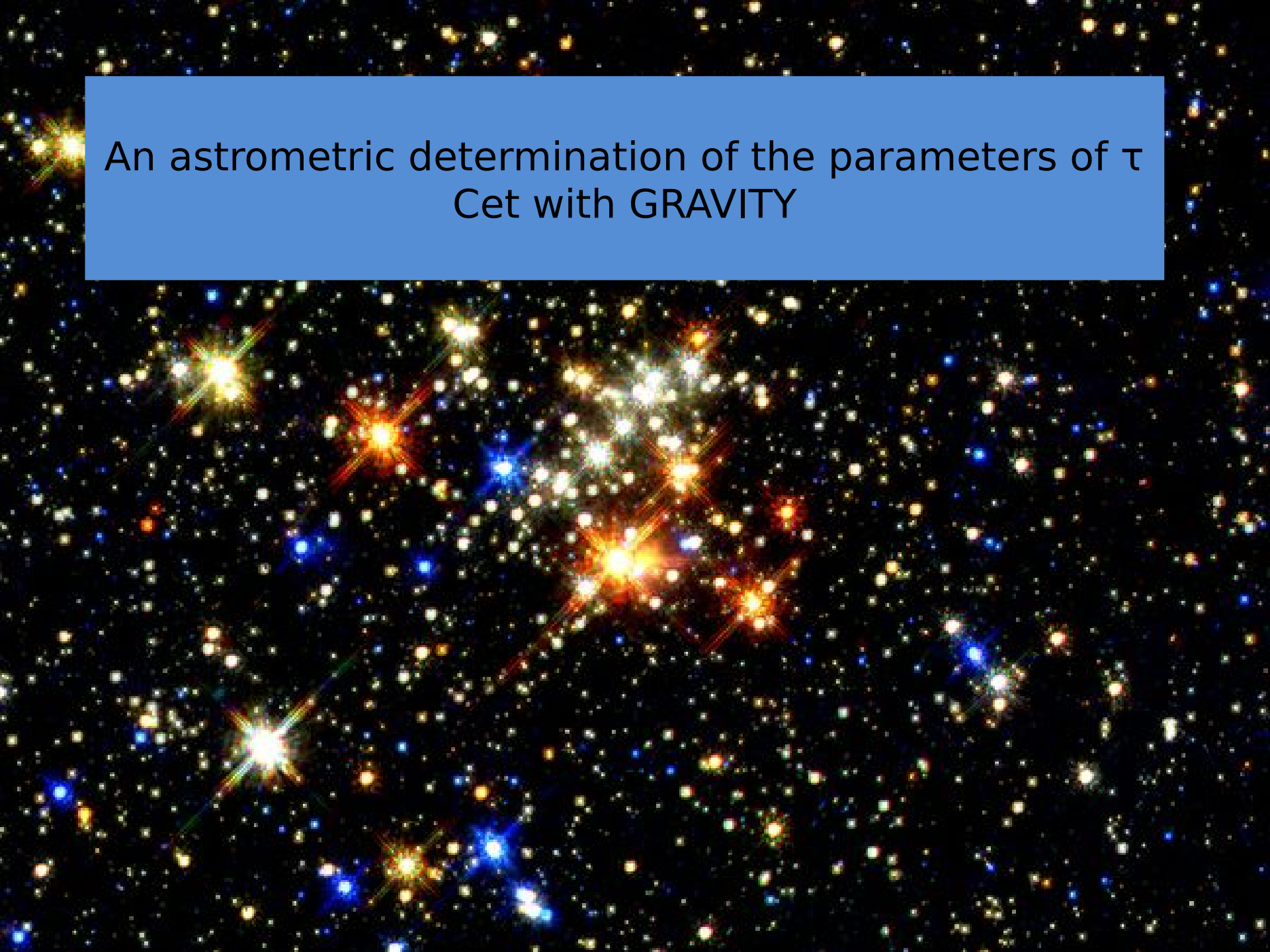

An astrometric determination of the parameters of τ Cet with GRAVITY

The Target

- Measure astrometric planetary wobble of τ Cet
- τ Cet is theorised to have 6 planets in orbit
- Longest planetary orbit is 640 days
- τ Cet is a type G8.5V star
- A distance of 3.65pc
- Θ = 2mas
- T-EFF = 5300K

- This is very solar system like!

The Science Goal

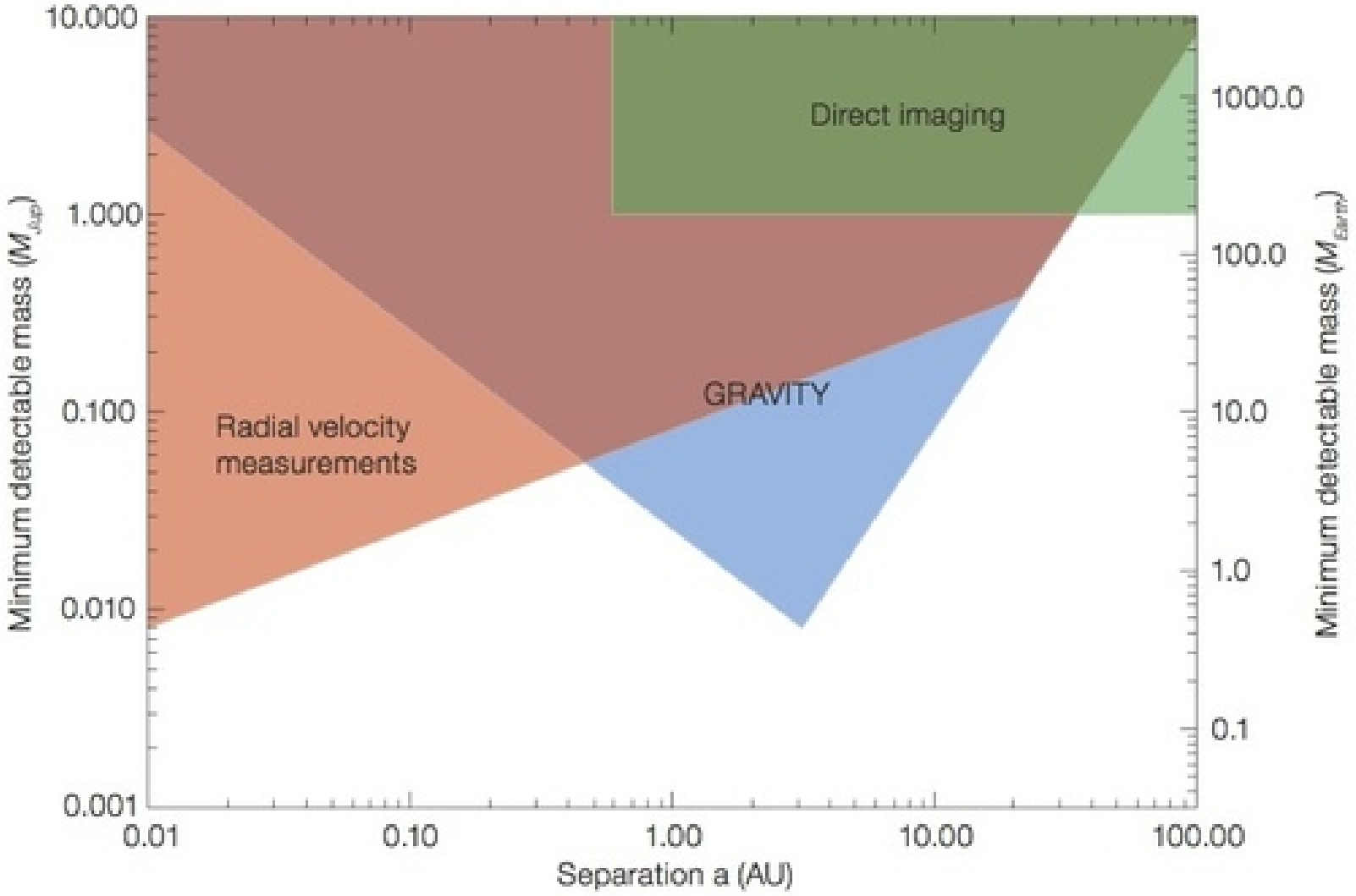
$$\rho = \frac{m_p (m_{star} + m_p)^{1/3}}{m_{star}} \cdot \sqrt{\frac{P^2 G}{4\pi^2}} \frac{1}{D}$$

- To measure full orbital parameters of the planetary system

Including:

- Mass of each planet
- Orbital radii
- Orbital Periods

Instrument Setup



Instrument Setup

- 4 UT’s to make use of high precision Adaptive Optics.

- 10 observations over three years =

  1.5 times maximum orbital period