



# **Expected planetary populations: Theoretical mass spectra for COROT**

**Splinter: Tomorrow, 16h30**

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# PREDICTING THE EXOPLANET POPULATION: WHY TO TRY?

- Being prepared,
- Test Theory,
- Design empirical tests for competing theories to rule out alternatives,
- Maximize conclusions about planet, formation.

# PLANET FORMATION

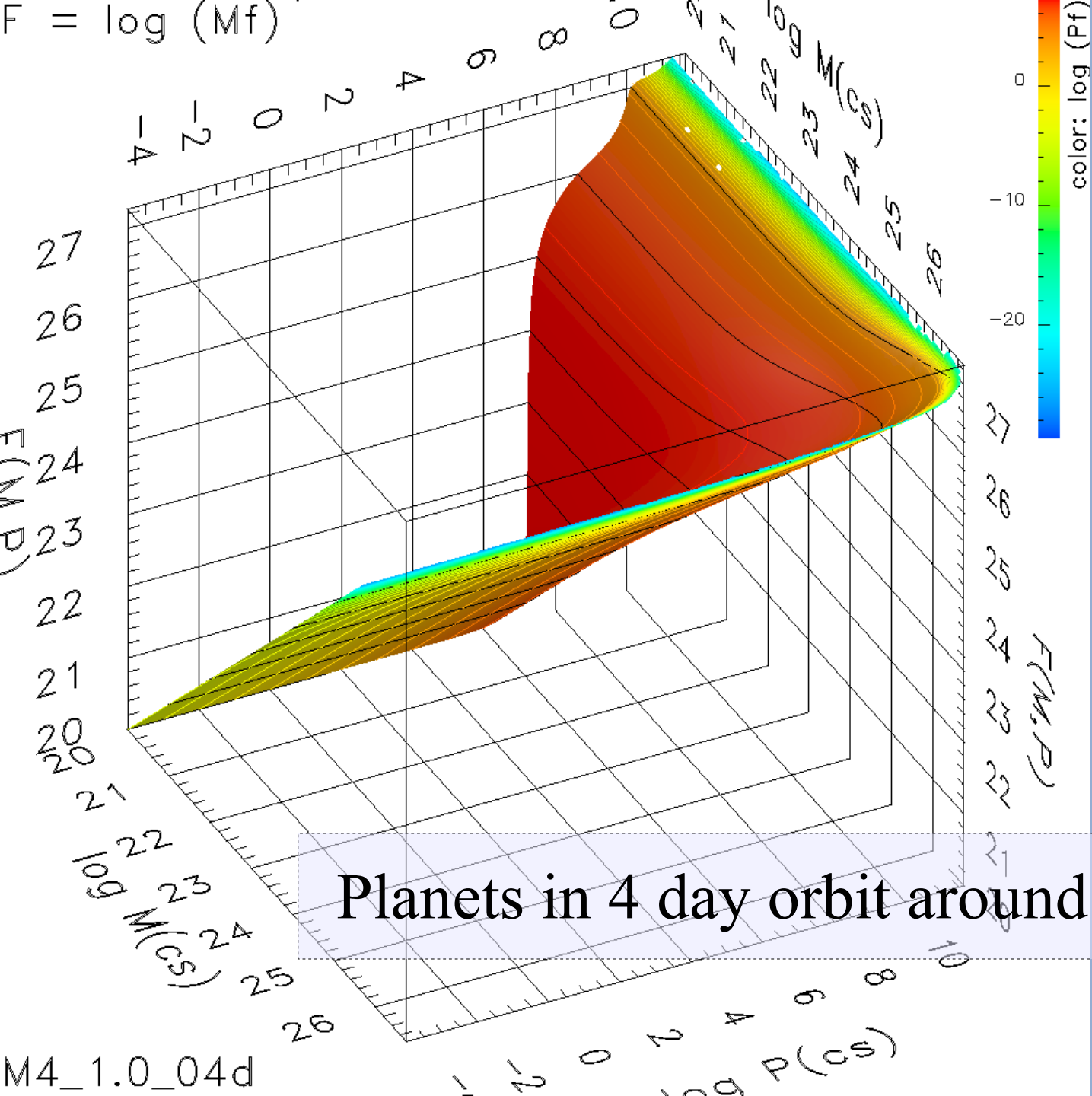
## CASE BY CASE

- Nebula conditions not well known,
- Incompletely known processes,
- Technical difficulties.

# THEORY

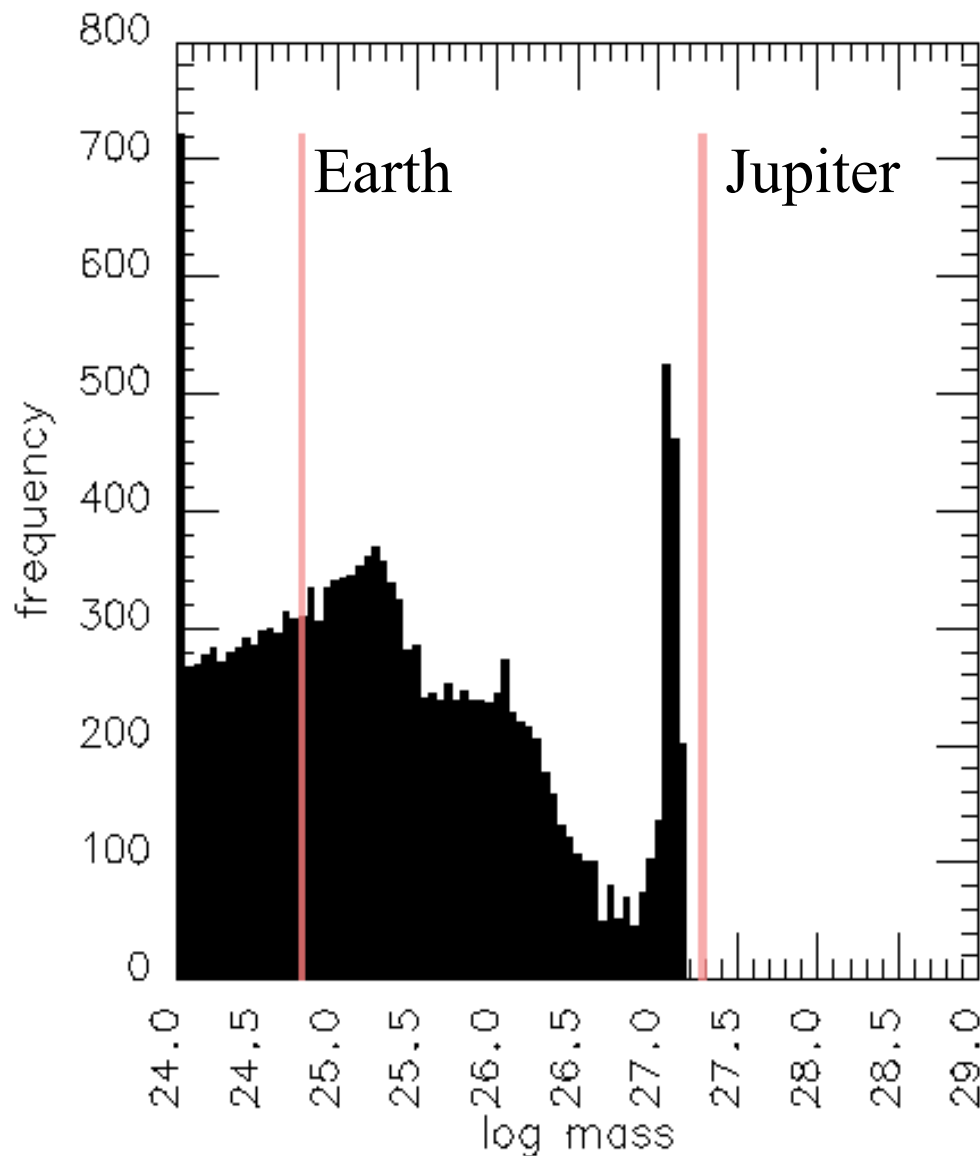
- Construct (proto)planets for  
*all nebulae*, at  
*all periods*, around  
*all stars*  
that are within reach of COROT.
- Count the planets and  
produce the mass distribution “spectra”

$$F = \log(Mf)$$



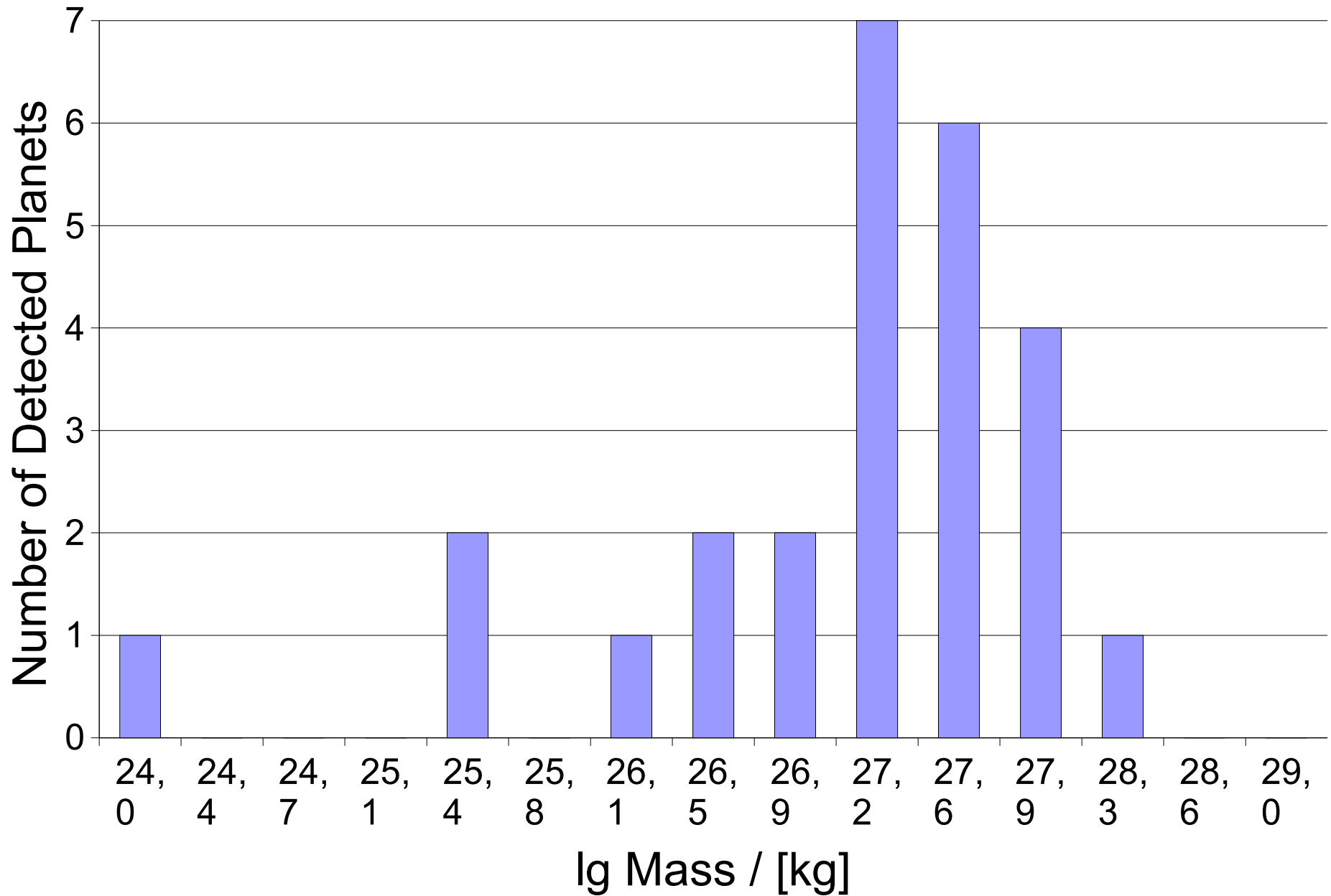
Planets in 4 day orbit around a solar mass

M4\_0.4\_04d

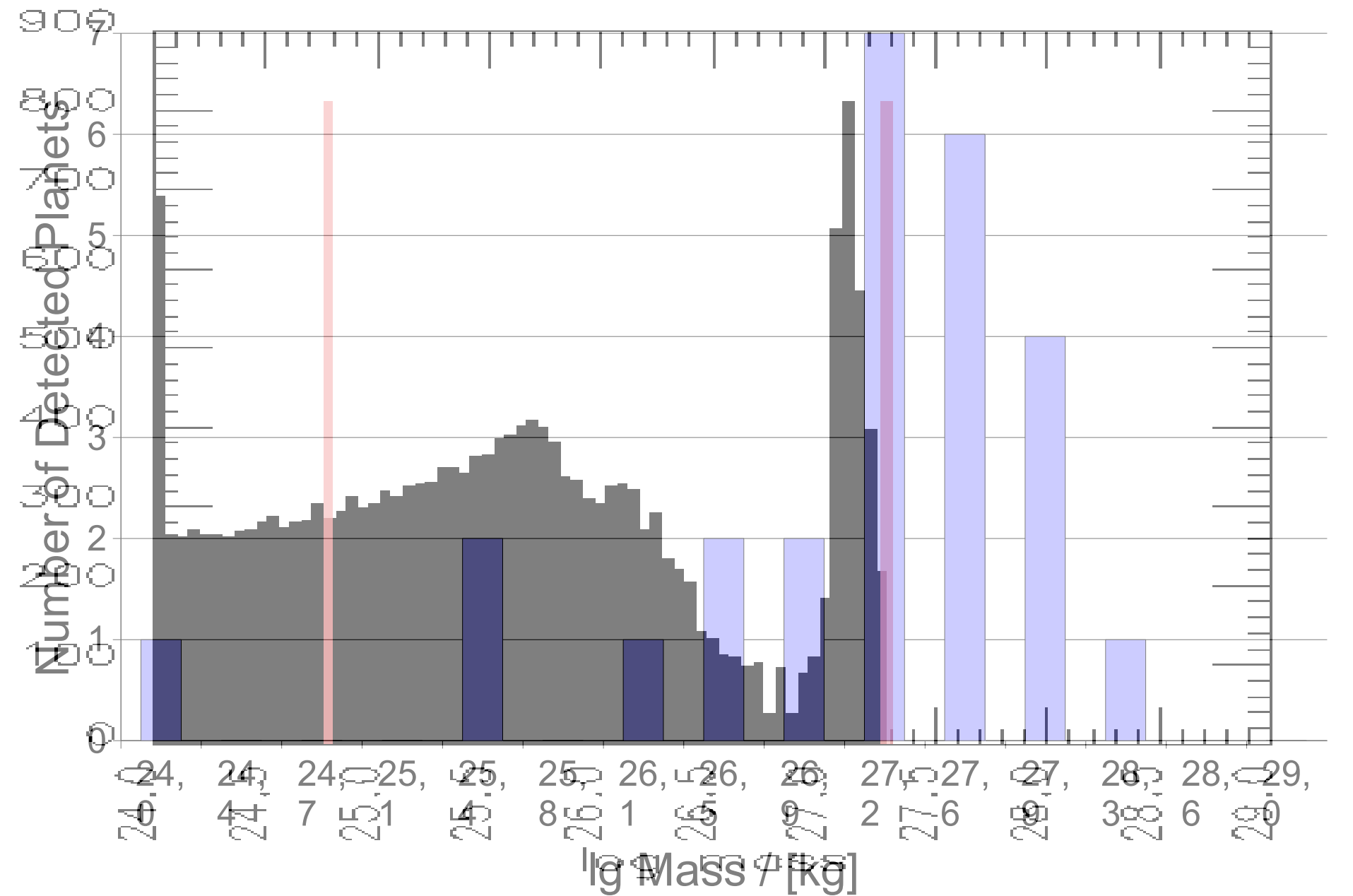


Planet  
masses in  
4 day orbit  
around a  
solar mass

# Period < 4 days

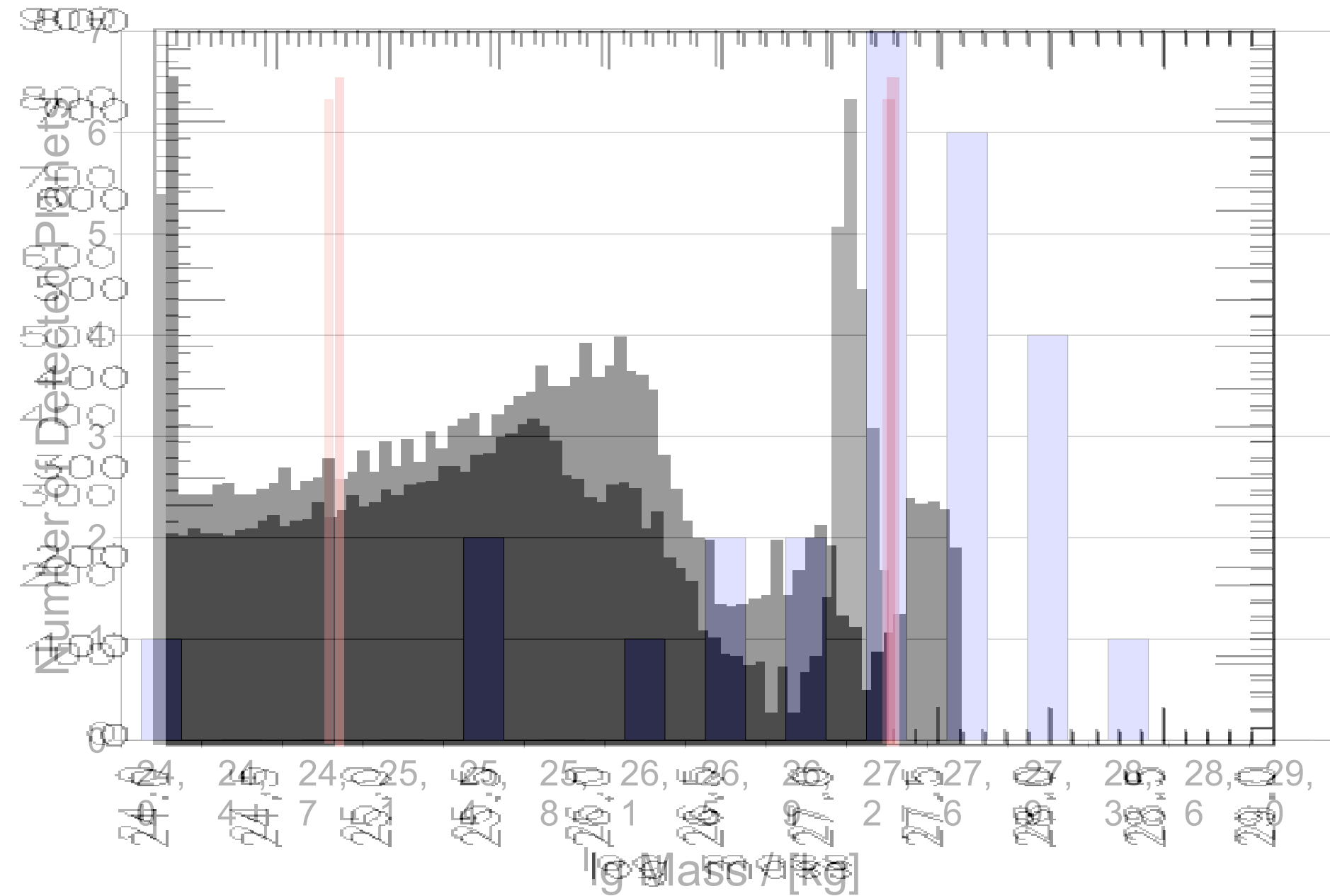


Period < 4 days M4\_1.0\_0



Period < 4 days

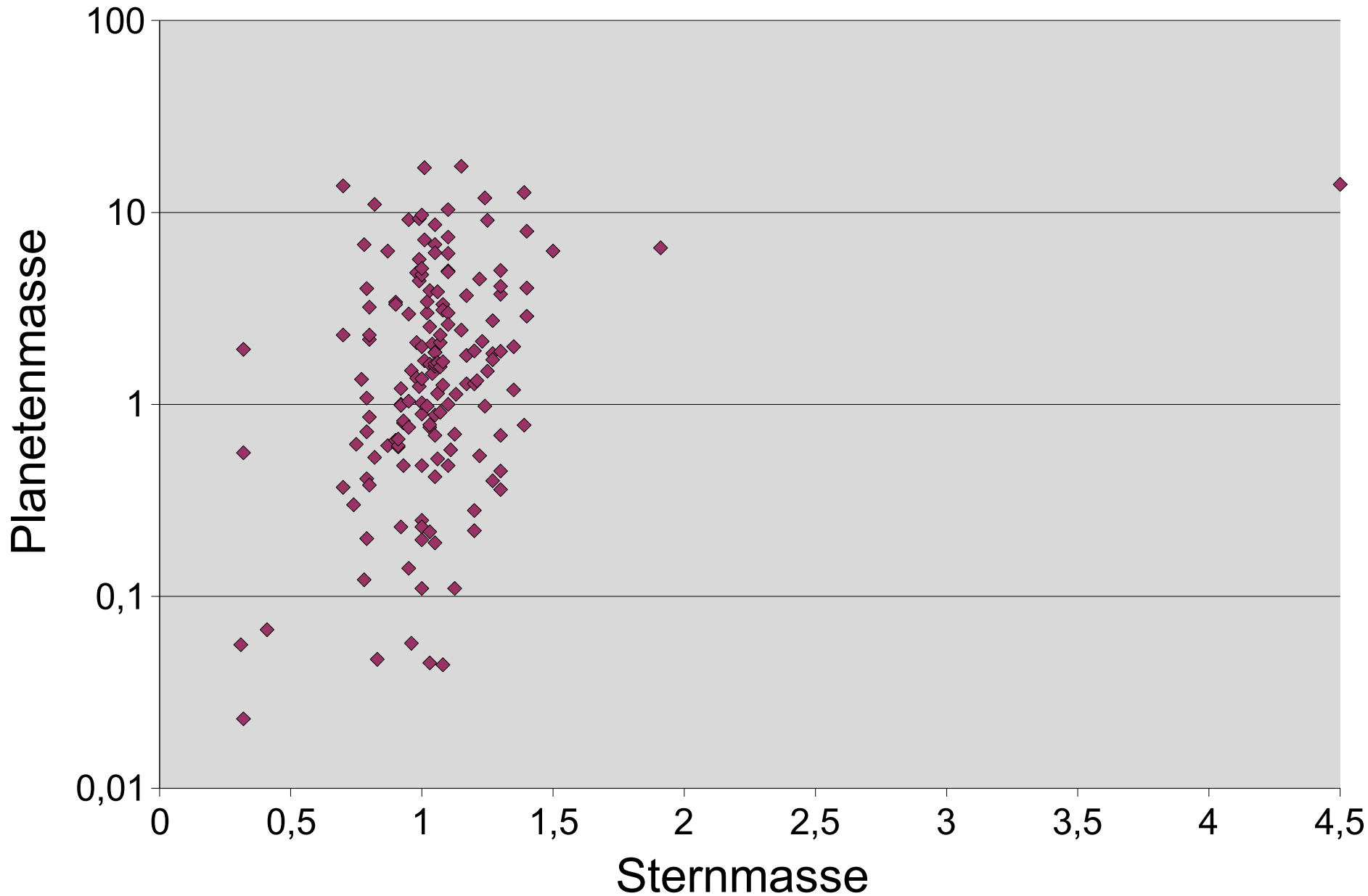
M4-1:0-0



# Theoretical Mass Spectra

- Planetary mass spectra for spectral types A/F,G,K,M,
- Data description / Download instructions,
- COROT population input: stellar parameters,
- Field-specific stellar populations?
- Consequences for follow-up,
- Improvements for Mark 2, theoretical planetary mass spectra.

# Planetenmassen und Sternmassen





UMi, Walter Koprolin 2003