Observing asteroids with VLTI / MIDI

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- **Asteroids sizes and albedos are not know from direct size measurment.**

Conversion of Absolute Magnitude to Diameter for Minor Planets

$$D = \frac{1329}{\sqrt{p}} 10^{-0.2H}$$

Fowler & Chillemi (1992)

Approximate parameters of asteroids

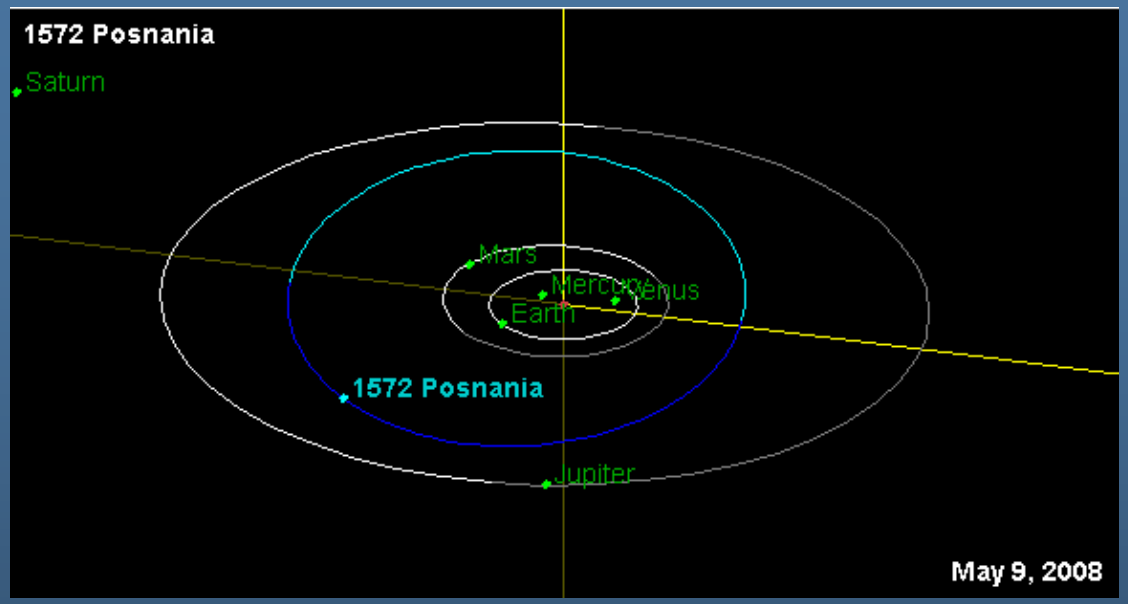
	1572 Posnania	352 Gisela
Radius (km):	33.62	20.27
Distance (a.u.):	3.10	2.19
Angular diameter (arcseconds):	0.021	0.019
Absolute magnitude - H:	10.00	10.01
Albedo - p:	0.156	0.426
Period (h):	8.048	7.490

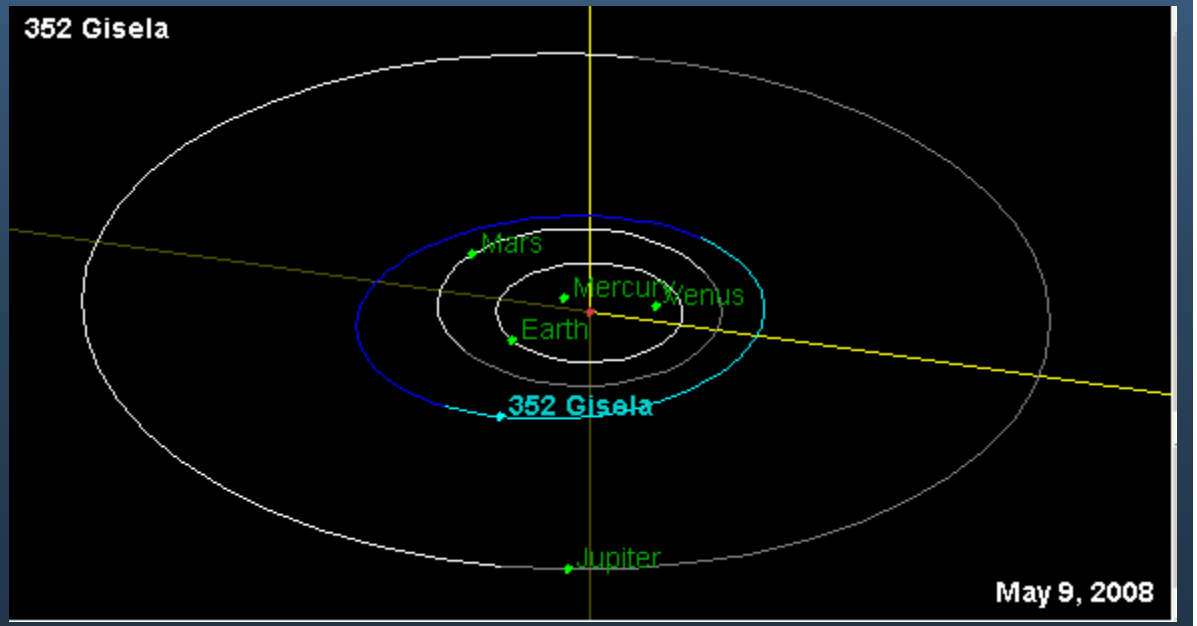
From the Standard Thermal Model we can obtain:

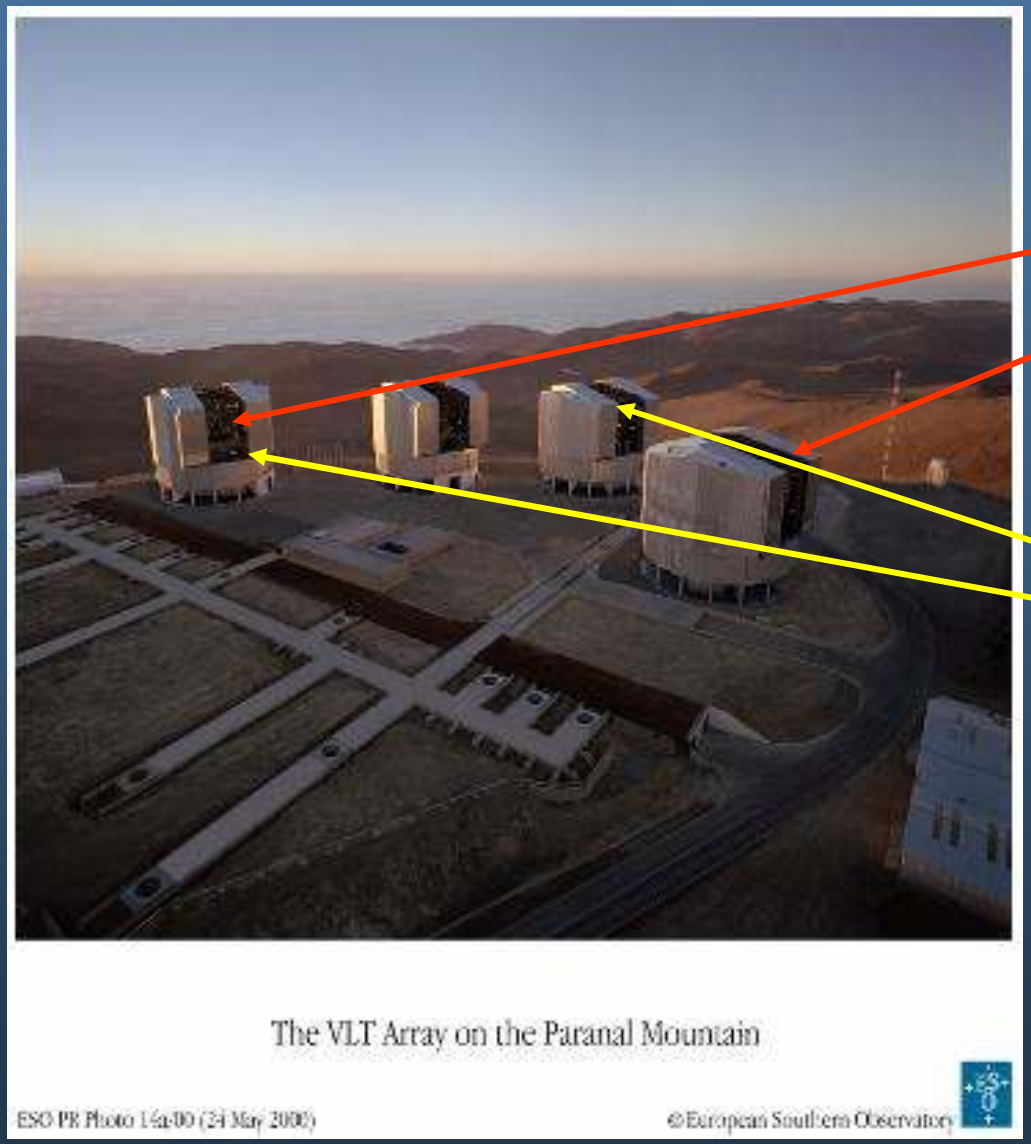
Flux (Jy):	1.30599	0.95124

Limiting flux for observing in N-band is ~ 1 Jy.

Orbit diagram







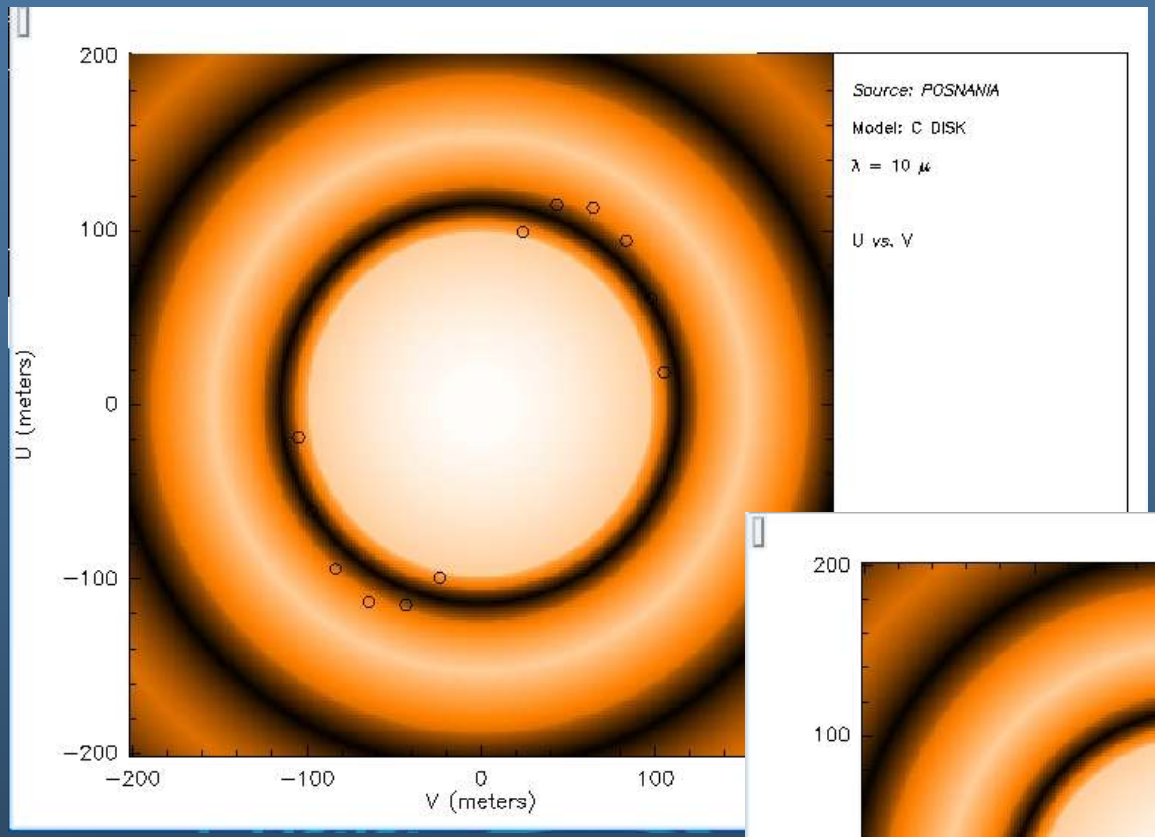
UT1 – UT4
130.2 m

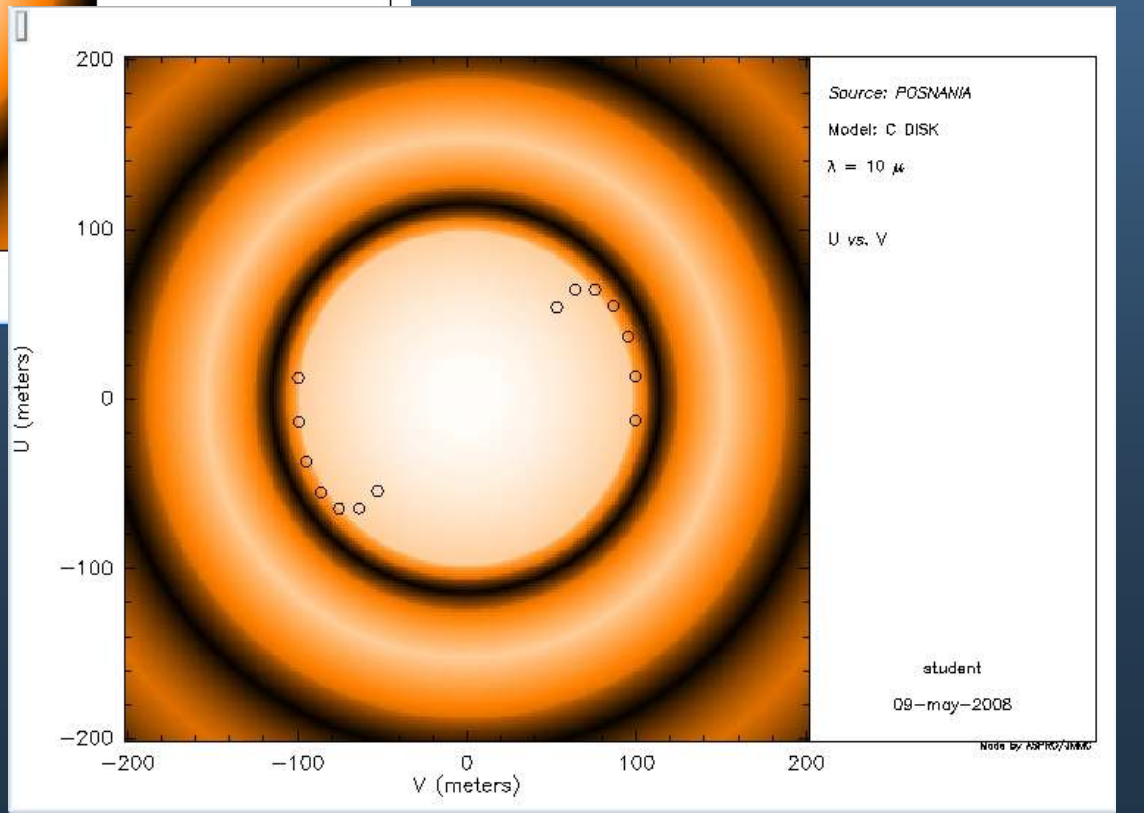
UT1 – UT3
102.4 m

Calibrators:

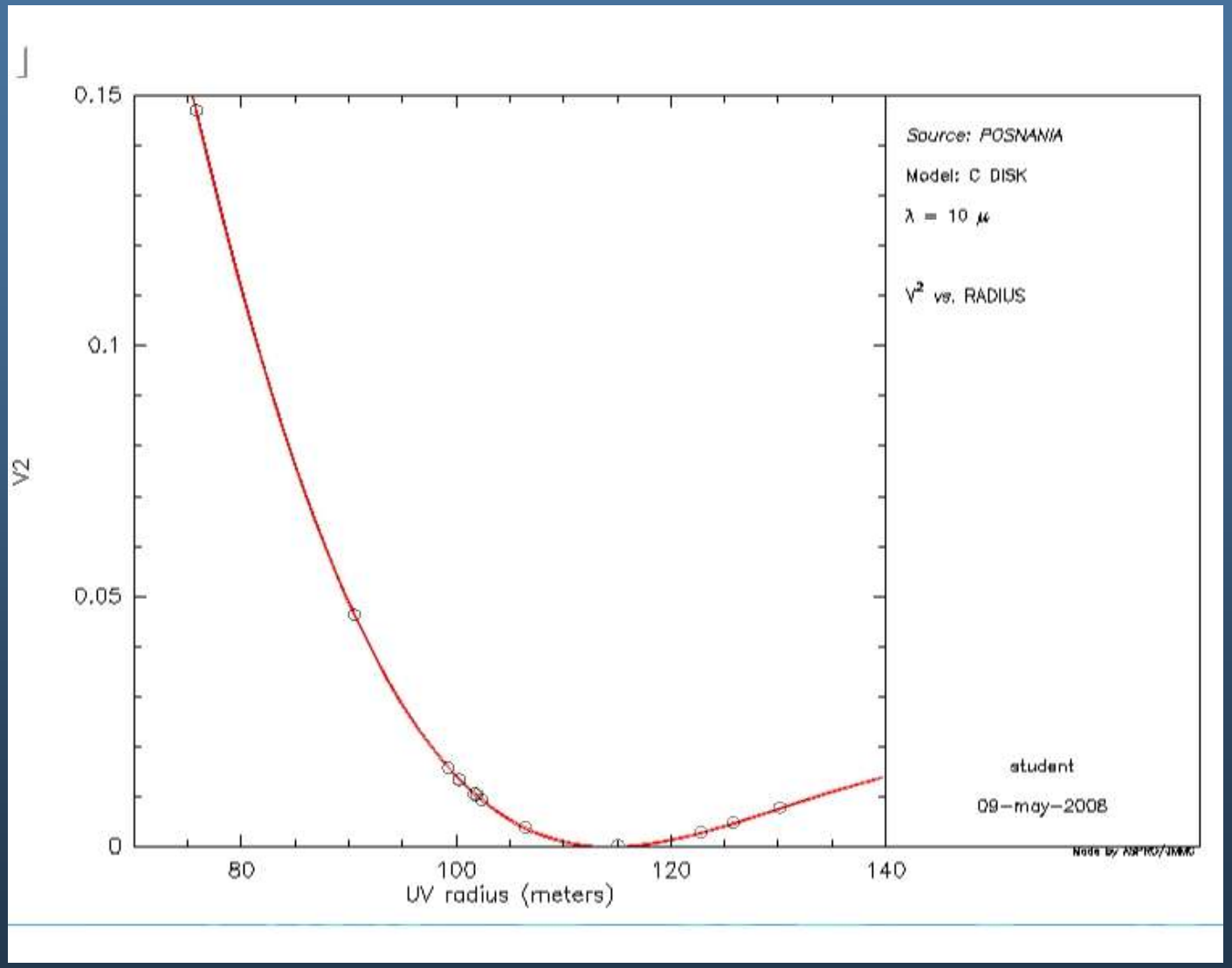
1. **hd130694**
2. **hd174116**

1572 Posnania

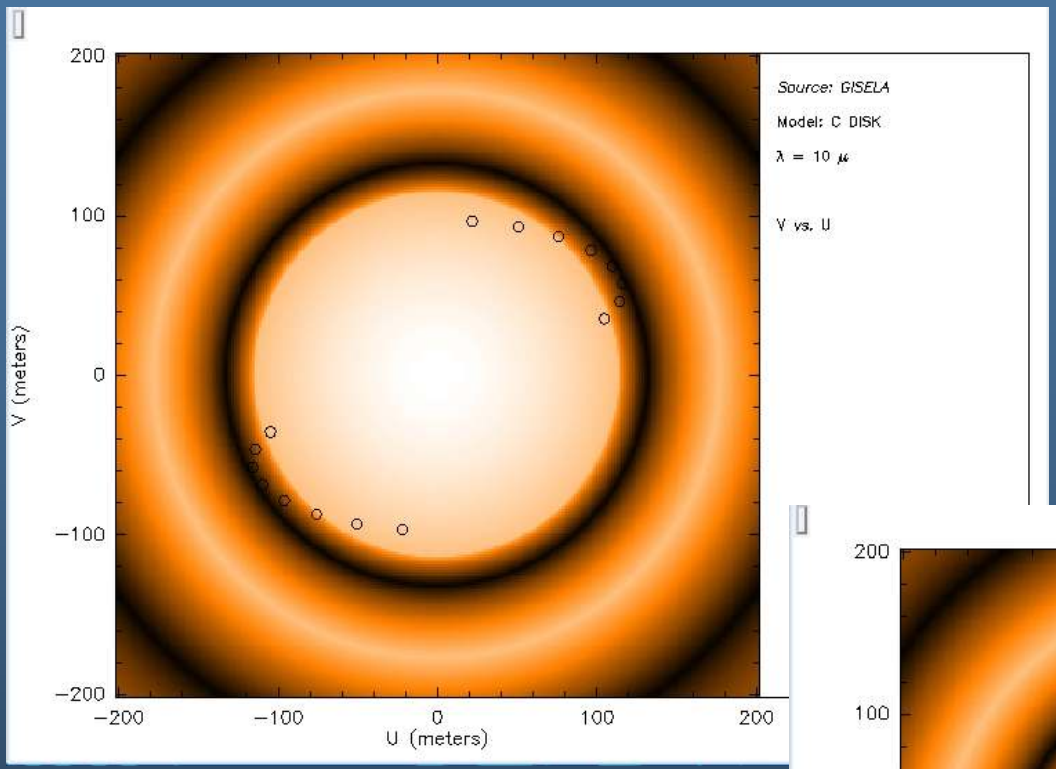


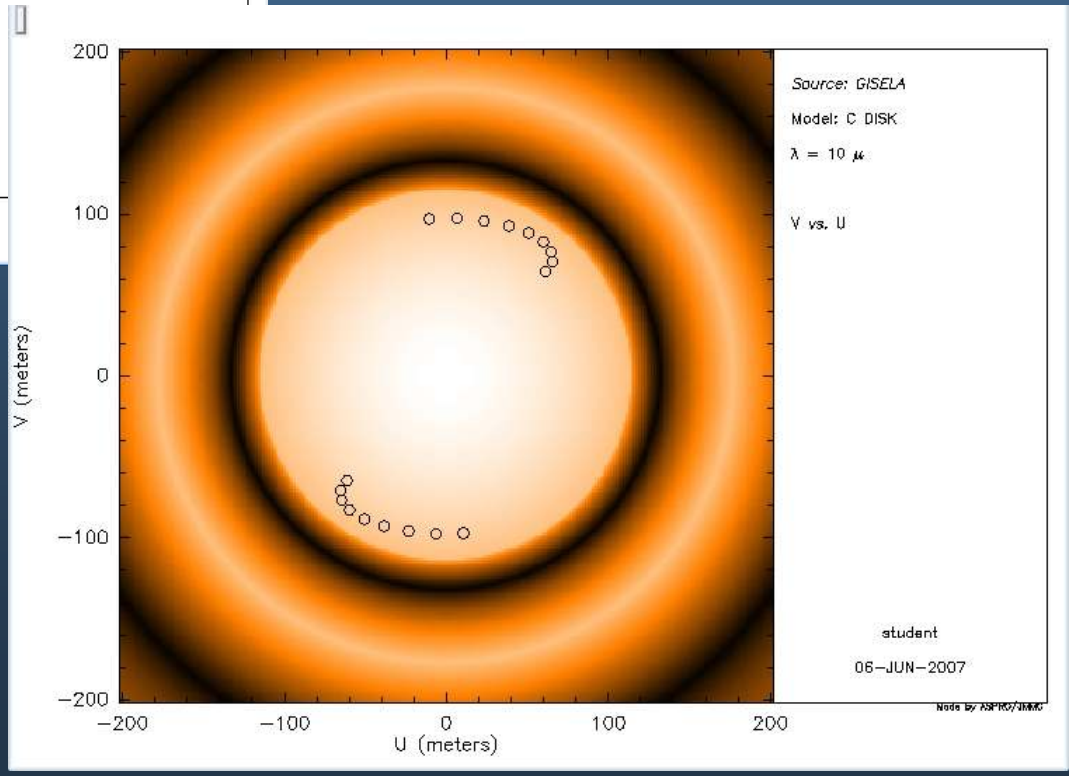


1572 Posnania

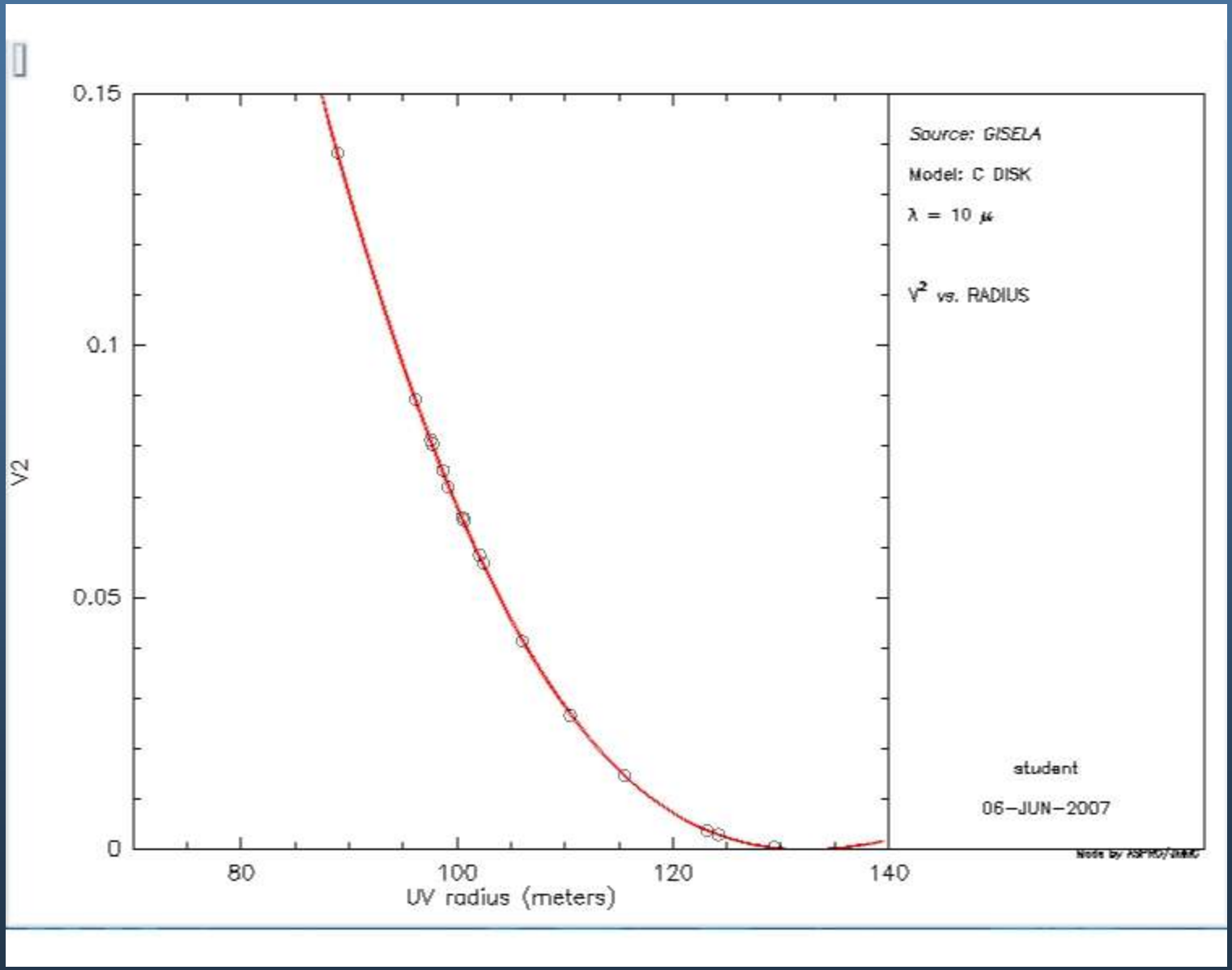


352 Gisela


Source: GISELA
Model: C DISK
λ = 10 μ
V vs. U
V (meters)
U (meters)
200
100
0
−100
−200
−200
−100
0
100
200


Source: GISELA
Model: C DISK
λ = 10 μ
V vs. U
student
06−JUN−2007
V (meters)
U (meters)
200
100
0
−100
−200
−200
−100
0
100
200

352 Gisela


0.15
0.1
0.05
0
V2
80
100
120
140
UV radius (meters)
Source: GISELA
Model: C DISK
λ = 10 μ
V² vs. RADIUS
student
06-JUN-2007

Conclusion:

We can use the visibilities to calculate the exact sizes of these asteroids.

Size and shapes are needed to derive average densities,

Combining this with photometric data we can refine the models for asteroids.

Delbo et al. made the first VLTI observation of an asteroid (234 Barbara with D = 41 km) to correct the models for asteroids.