

## 3. Austrian - Hungarian Workshop

### *Escapes and Collisions in the inner Solar System*

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# *Introduction*

Our Solar System seems to be stable

Jaques Laskar showed chaotic features

Calculations over a periode of 10 Million  
years

Several close encounters and collisions  
between Mercury and Venus

# *Stability in the Solar System*

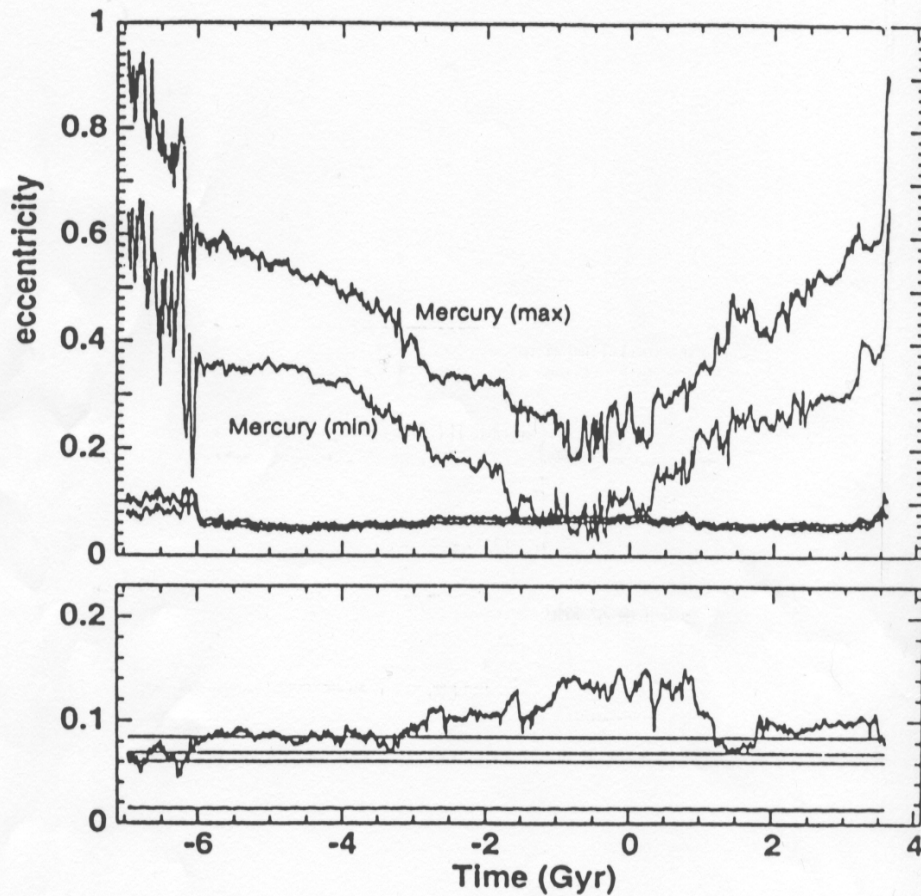
Question of stability

Stability proofs of Lagrange, Laplace and Poisson

Chaotic Features shown by Laskar

# Laskar's Work

Possible Escape of  
Mercury at low  
eccentricity



## *Model and Calculation*

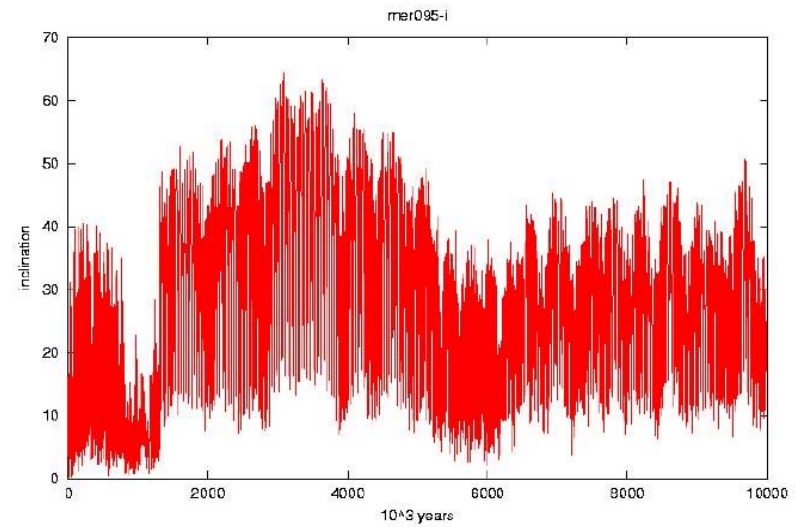
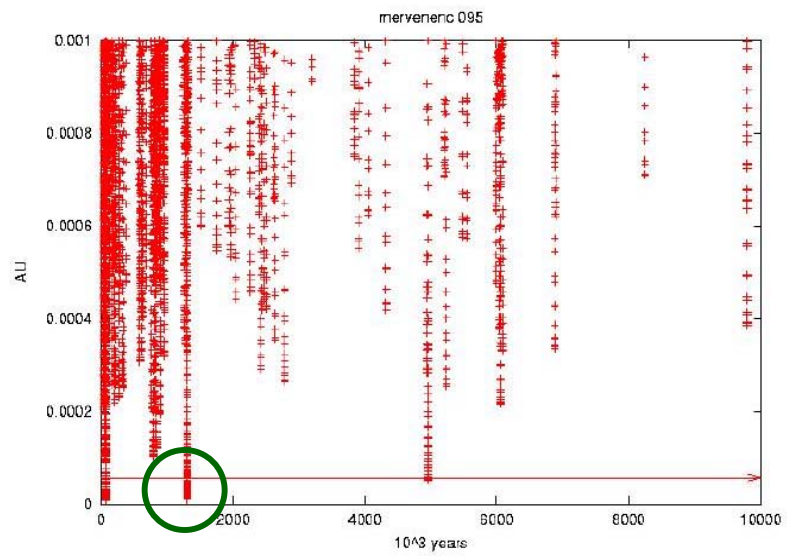
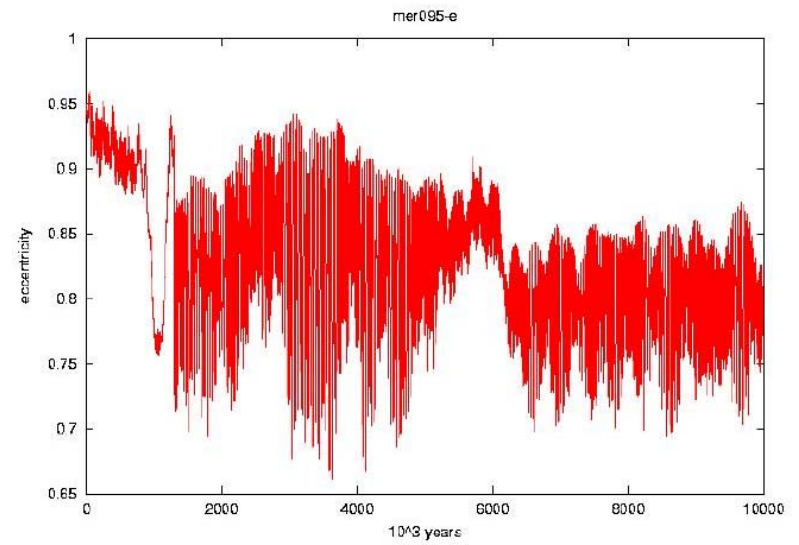
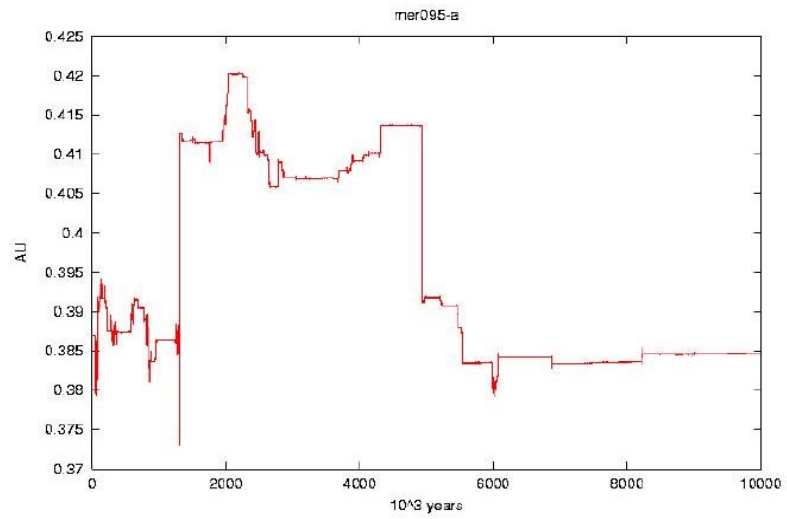
The inner system with Jupiter and Saturn

Different initial conditions for Mercurys  
eccentricity

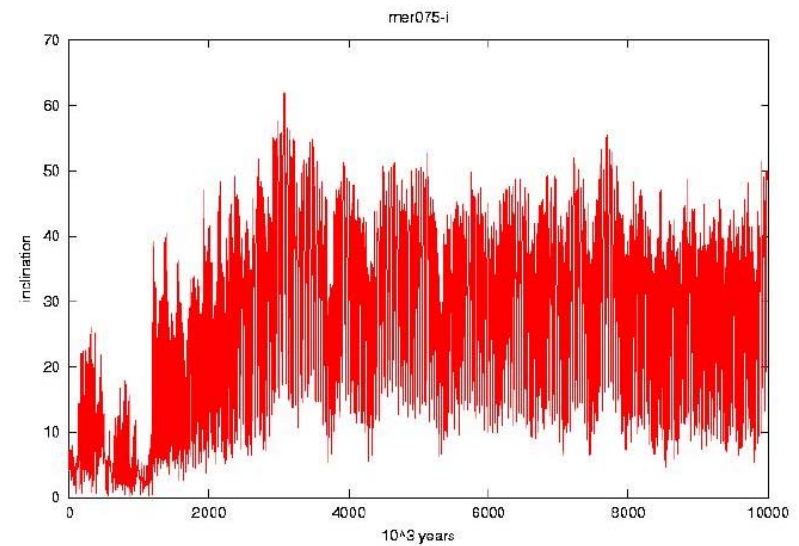
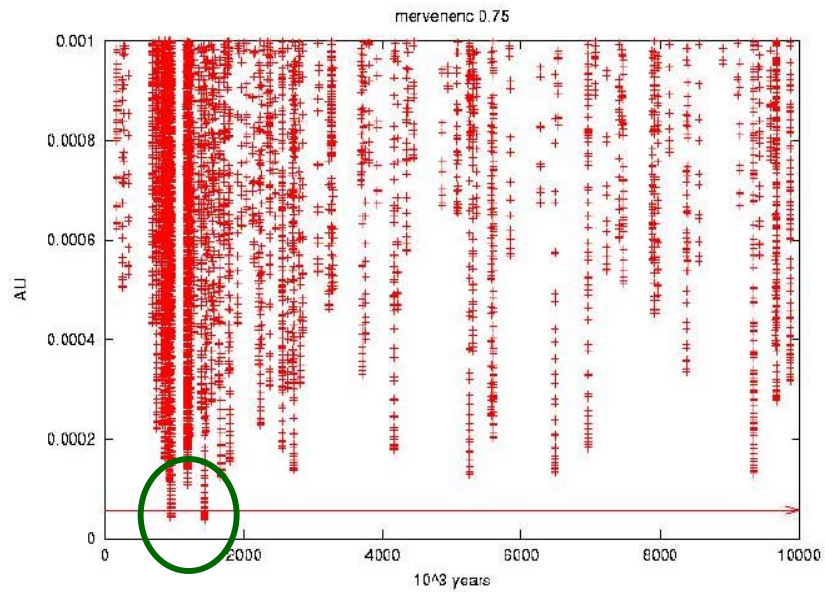
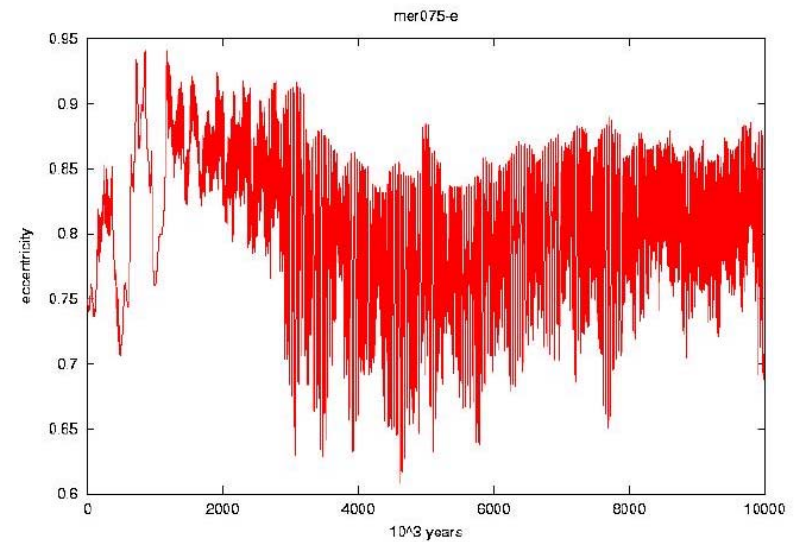
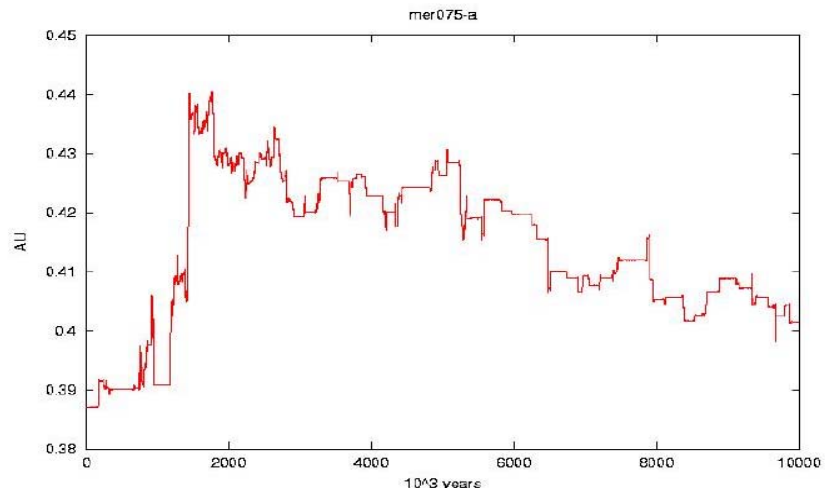
10 Million years integration time

Baricenter Earth-Moon

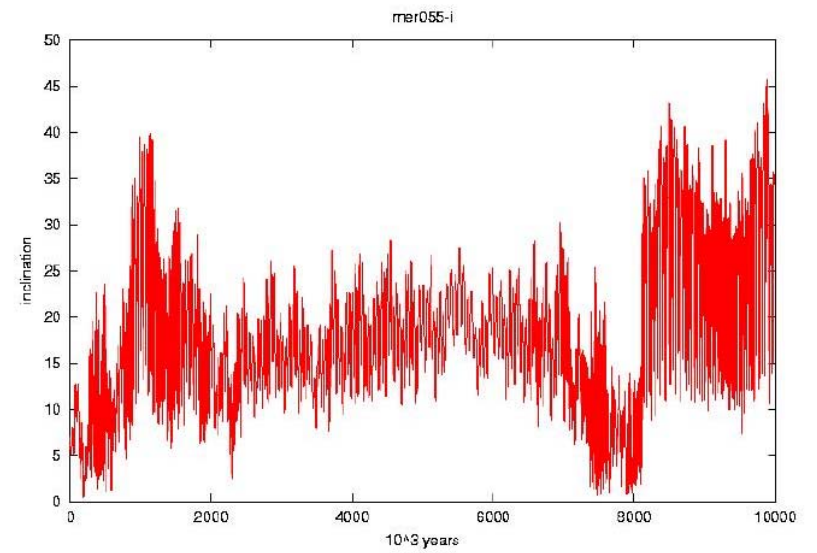
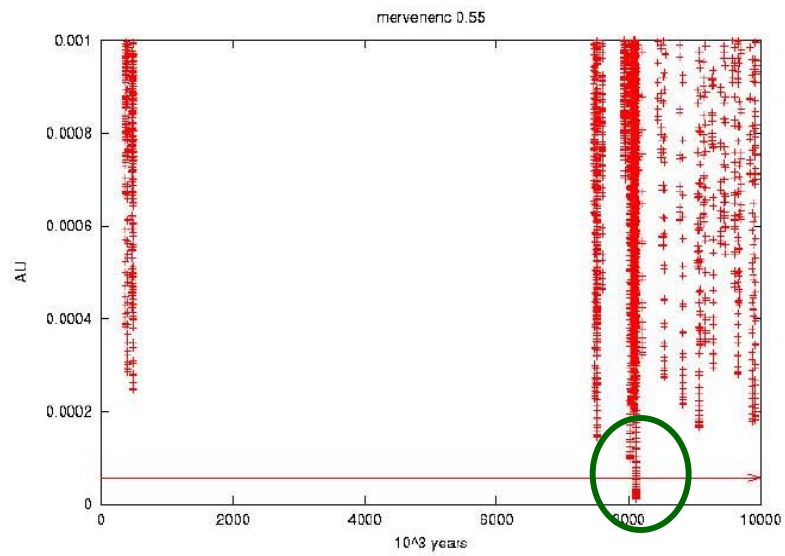
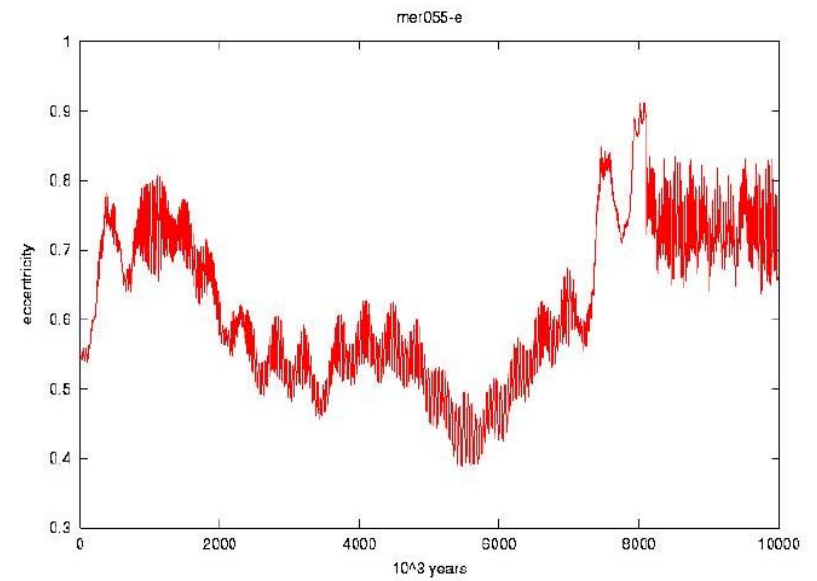
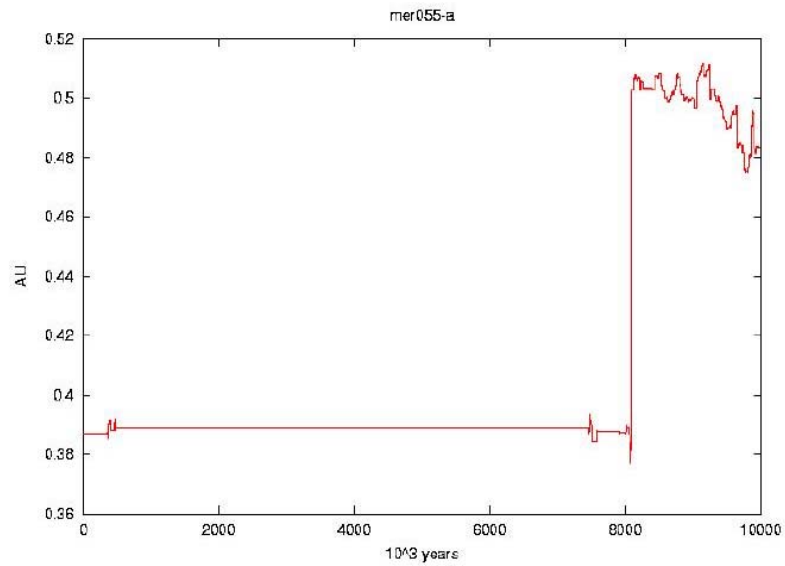
# Results for $e=0.95$



# Results for $e=0.75$

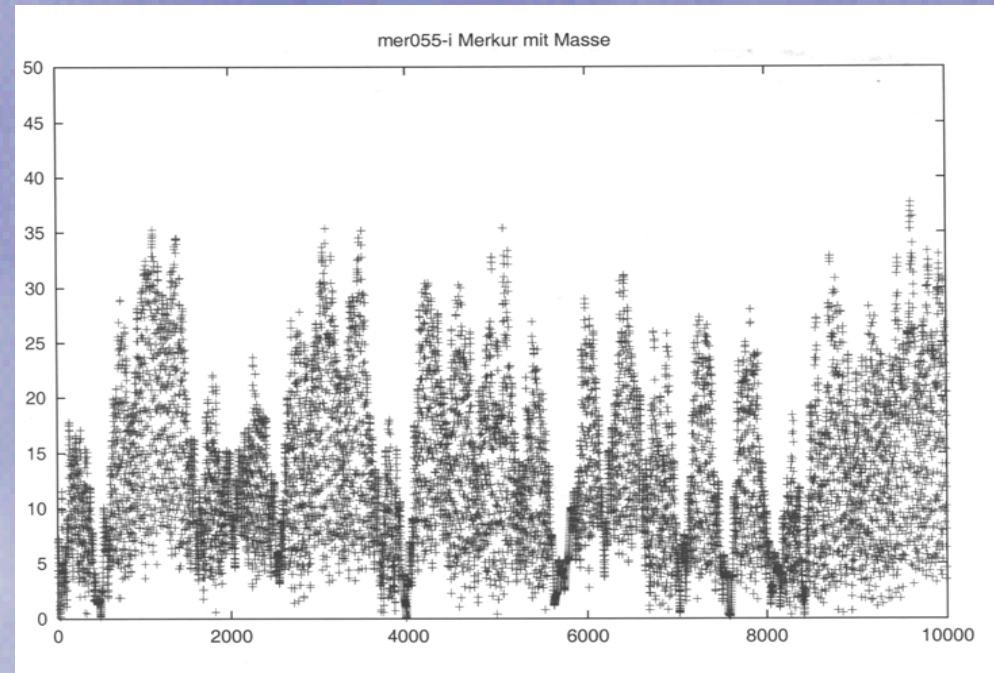
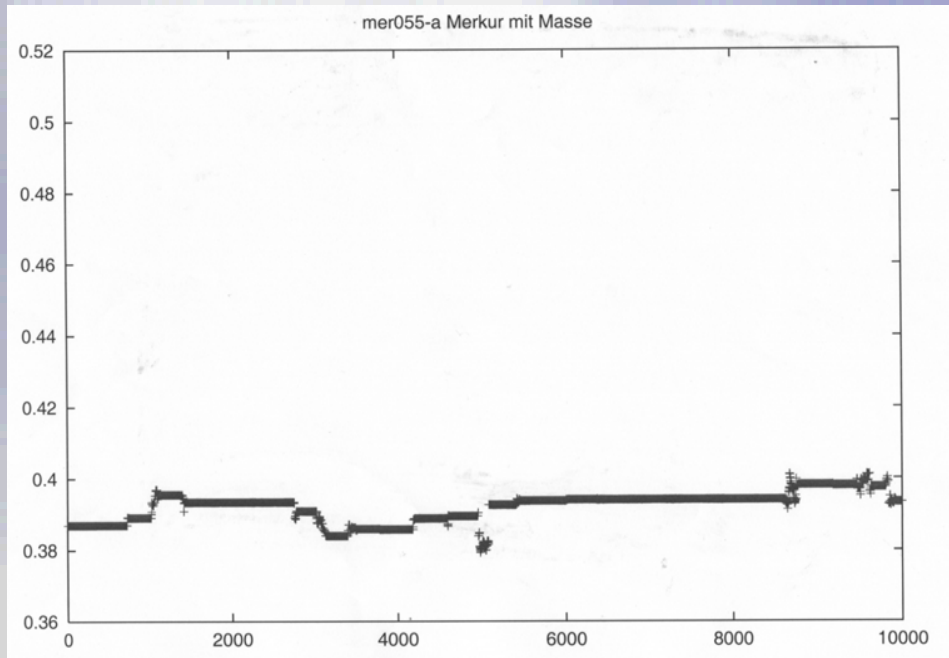
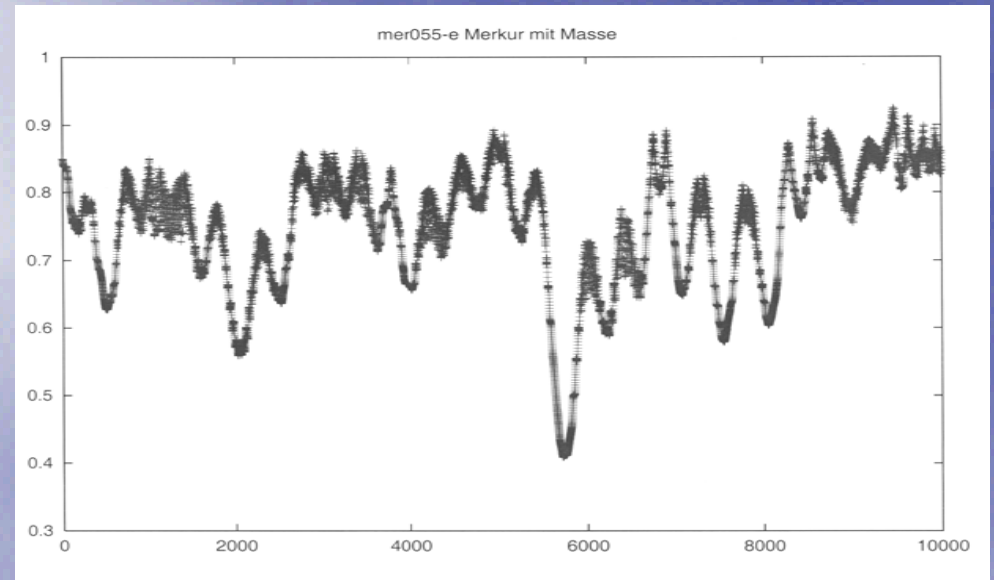
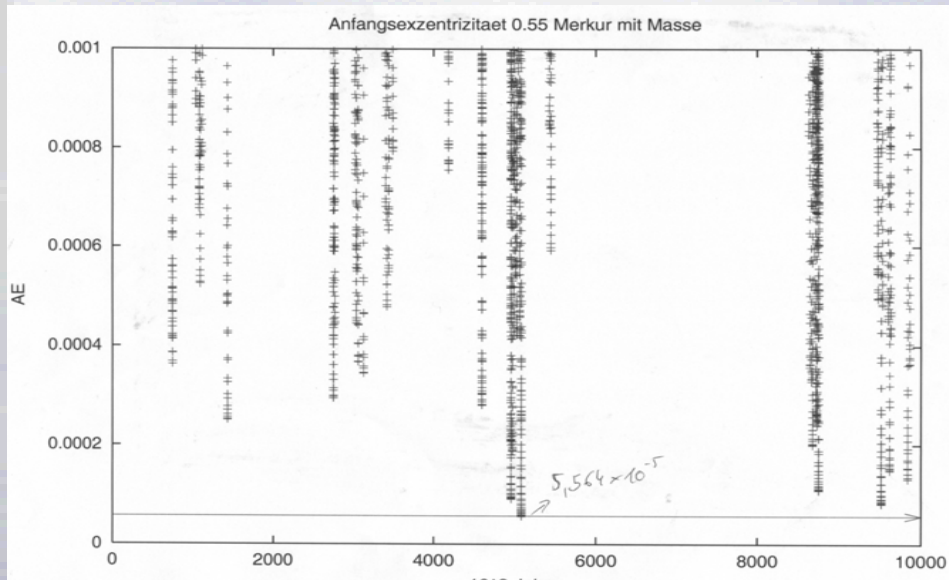


# Results for $e=0.55$

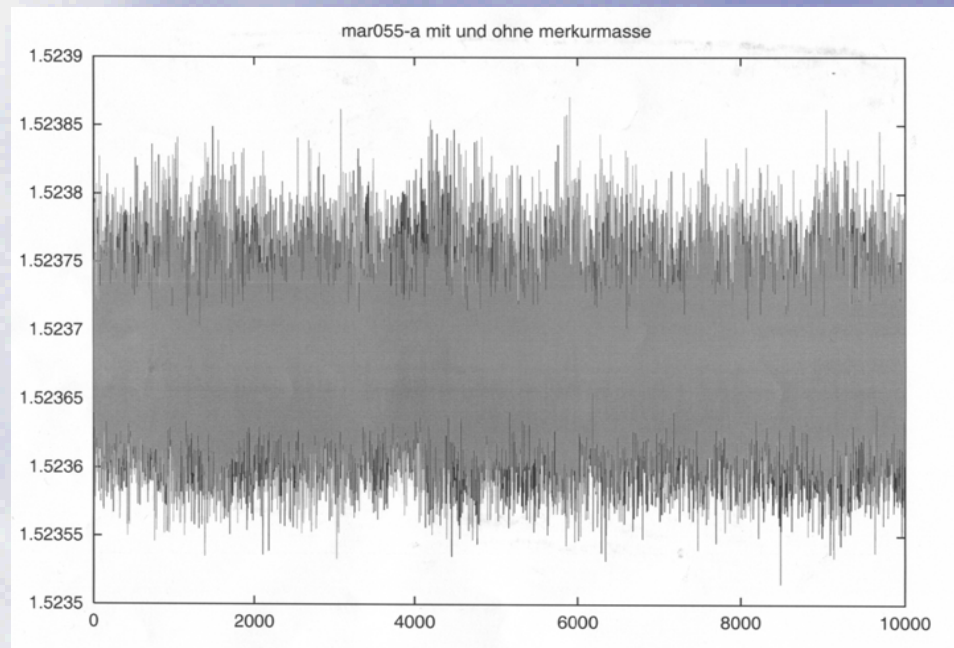
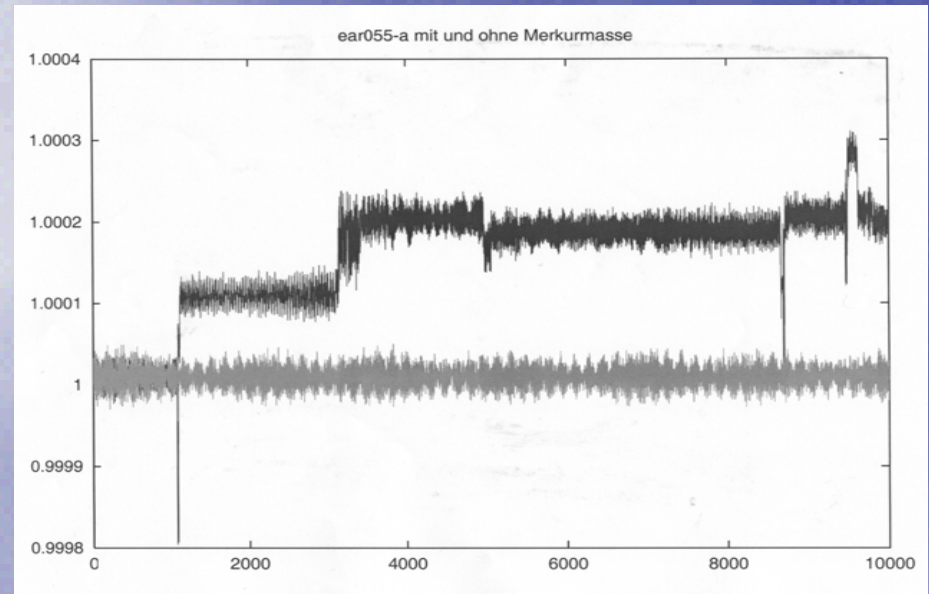
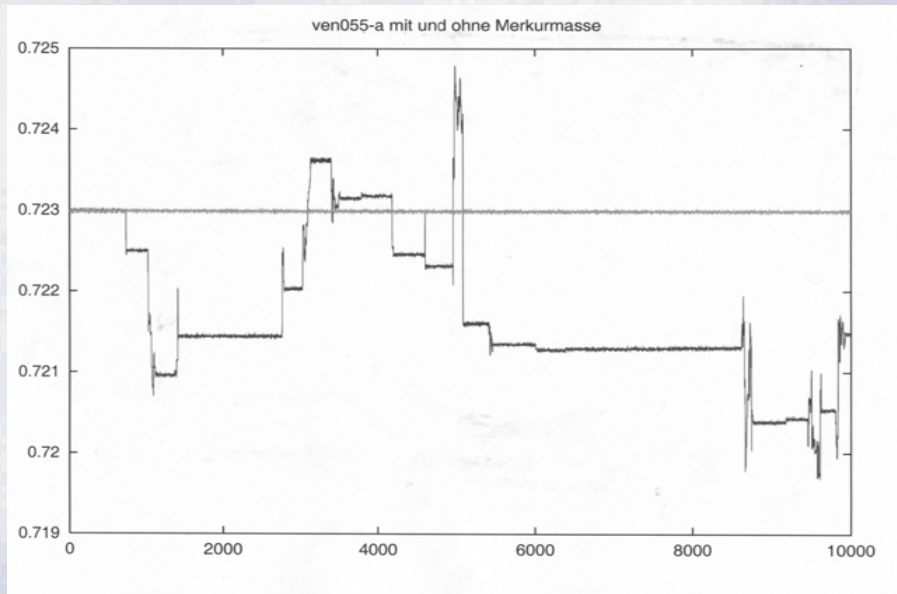




# Results for $e=0.55$ , $m \neq 0$



# Results for $e=0.55$ , $m \neq 0$



## *Conclusions*

Several close encounters between Mercury and Venus

Collisions of Mercury and Venus at low initial conditions for Mercurys eccentricity

Verification of Laskars work