

## 417 2551523 : MAJOR PHYSICS

KEY WORD: LAPLACE / ORBIT DETERMINATION / PRELIMINARY ORBIT / PLANETS

URAIWUN BOURKONG : PLANETS ORBIT DETERMINATION FROM  
OBSERVATION BY LAPLACE METHOD. THESIS ADVISOR : ASSIST. PROF.  
PIRAPAT SIRISOMBOONLARP, D.Sc., 173 pp. ISBN 974-17-0377-5.

The purpose of this thesis is to determine the classical elements of Mars and Saturn based on the observational data. Using the observational data, the preliminary orbit determination is performed by Laplace method using nine sets of angular positions at epoch time measurement obtained by Dependency method (five comparisons). The orbital data is then obtained by solving numerically the scalar equation of Lagrange based on heliocentric ecliptic orbit. Using the orbital data, we compute the preliminary elements and the result obtained is then improved by using multiple linear least squares regression. Our result for Mars agrees well with that in Ref. Temmongaido while there are some discrepancies in the case of Saturn which might be due to the errors in the observational data.