

6 : THEORY I : DISKS

(6.1) Introduction and Overview

- (a) Scope of these Lectures

(6.2) Epicycles

- (a) Overview
- (b) Vertical z Motions
- (c) Radial Motions
- (d) Azimuthal Motion
- (e) Values Near the Solar Neighborhood

(6.3) Resonances

- (a) Rotating Patterns
- (b) Corotation Resonance (CR)
- (c) Lindblad Resonances (ILR, OLR)
- (d) Importance of Resonances

(6.4) Density Waves

- (a) Kinematic Density Waves
- (b) Lin-Shu (QSSS) Density Wave Theory
 - (i) Motivation and Sketch of Approach
 - (ii) Results
 - (iii) Remaining Problems with QSSS
- (c) Alternative Sources of Global Density Waves
 - (i) Tides
 - (ii) Bars and Oval Distortions

(6.5) Disk Instabilities and Amplification

- (a) Local Disk Stability : Toomre's Q Parameter
 - (i) Modified Jeans Analysis
 - (ii) Q from Disk Dispersion Relations
- (b) Swing Amplification
 - (i) The Swing Amplifier
 - (ii) Feedback for the Amplifier
- (c) Bar Instability and its Suppression
- (d) Flocculant Spirals
 - (i) Local Disk Instability
 - (ii) Self-Propagating Star Formation