Density waves, protoplanetary disks and planets

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Density waves play an important role in the dynamical processes governing the evolution of protoplanetary disks and protoplanets within them.
We review some recent work on the excitation of density waves through effects due to turbulence and the presence of structural features produced by the gravitatonal perturbation of embedded planets.
We also discuss the influence of density waves excited by pairs of proplanets on each other, and how this can stall the process of convergent migration leading to the formation of mean motion commensurabilities. This can lead to pairs of protoplanets with period ratios exceeding resonant values as seen in recent results from KEPLER.