

STELLAR ORBITS IN DOUBLY BARRED GALAXIES

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Stellar orbits have been computed in a two dimensional rotating potential representing a doubly barred galaxy and surfaces of section (s.o. s.) computed. Both bars are taken to rotate at the same pattern speed. Two cases have been considered. in the first case the secondary bar is aligned parallel with the primary bar while in the second case the bars are perpendicular to each other. in each case the effect of changing the mass of the secondary bar is studied. An examination of the s.o.s. shows that the influence of a secondary bar on stellar orbits in a barred galaxy is to destabilize them and to weaken and eventually destroy both bars. A small secondary bar can retain its identity, but as it increases in mass, it will shrink in size, as will the primary. This behavior is interpreted as an interplay between the natural resonance frequencies of the bars and the appearance and outward movement of an outer ILR and, in the case of the parallel bars, also the inward movement of an inner ILR.