N-BODY SIMULATIONS OF STELLAR STREAMS, BARS, SHELLS AND RINGS IN SPIRAL GALAXIES

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We used N-body simulations to explain the formation of structures in spiral galaxies. Those observed structures like bars, shells, streams can be formed in mergers, flybys, and the evolution of galaxies in isolation. We used N-body models for spiral galaxy similar to Milky Way and a dwarf galaxy. Spiral galaxy is presented with three components: disk, bulge and dark matter halo. For dwarf galaxy, we investigated two possibilities: with and without disk, while other components are also spherical bulge and dark matter halo. In different scenarios of merger and flyby events, different structures are formed. We found parameters of those interactions, like initial positions and velocities of galaxies and describe properties of the formed bar, stream, and other structures.