**RENATO CALLEJA**, IIMAS-UNAM

*Symmetries and choreographies in families that bifurcate from the polygonal relative equilibrium of the n-body problem*

In my talk I will describe numerical continuation and bifurcation techniques in a boundary value setting used to follow Lyapunov families of periodic orbits. These arise from the polygonal system of n bodies in a rotating frame of reference. When the frequency of a Lyapunov orbit and the frequency of the rotating frame have a rational relationship, the orbit is also periodic in the inertial frame. We prove that a dense set of Lyapunov orbits, with frequencies satisfying a Diophantine equation, correspond to choreographies. We present a sample of the many choreographies that we have determined numerically along the Lyapunov families and bifurcating families, namely for the cases n=4,6,7,8 and, 9. We also present numerical results for the case where there is a central body that affects the choreography, but that does not participate in it. This is joint work with Eusebius Doedel and Carlos García Azpeitia.