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# Understanding Planetesimal Accretion at Short Orbital Periods

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Using the tree-based N-body code ChaNGa, we explore the consequences of planetesimal-planetesimal accretion in the context of systems of tightly-packed inner planets (STIPs). Formation models for STIPs often begin with the assumption that the building blocks for the planets previously underwent a phase of oligarchic growth, in which a handful of large bodies develop and leave behind a dynamically hot population of residual planetesimals. We show that the conditions required for oligarchic growth become difficult to achieve close to the star, where the dynamical and orbital timescales are short. In this case, planetary embryos can form much larger than the typical isolation mass. We explore a range of physically motivated initial conditions for the starting distribution of planetesimals and find that a number of different outcomes for the resulting embryo and residual planetesimal populations are possible. In some cases, a transition region develops partway out in the disk, the location of which serves as an artifact of the original planetesimal distribution.