

## **The effects of protoplanet migration through a planetesimal disc**

**Martin Andrews, Dept. Physics and Astronomy, UCL**

A numerical model which simulates Type I and Type II migration of a protoplanet through a disc of planetesimals in the presence of aerodynamical gas drag is used to investigate the effects of protoplanet migration on the survivability and scattering of planetesimals. The planetesimals caught in the resonances of a migrating protoplanet are able to 'breakout' of resonance with suppressed eccentricities due to the damping effect of aerodynamic gas drag. If gas drag were absent, then the planetesimals would remain trapped in resonance for longer resulting in much higher eccentricities. The implication of this result is that after the inevitable interaction with the protoplanet those planetesimals that survive are not scattered as far as for the non-gas-drag case and are more likely to return to a region within their original orbits prior to resonance capture. This raises the question: Could there be enough material remaining around stars with 'hot Jupiters' with which to form terrestrial planets?