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Title: *"Dynamical formation of the Asteroid Belt"*

Abstract. The origin of the orbital structure in the asteroid main belt has been a puzzling problem for decades; an initially "flat" disc of circular and co-planar orbits cannot evolve into the current distribution within ~ 4 Gy, if the giant planets always follow the same orbits. Hence, the asteroid belt had to be depleted in mass and excited in inclination (up to 30 deg) during the early post-formation stages of the solar system and before the giant planets reached their final configuration. Recent works suggest that this is extremely difficult to reconcile with the standard scenario of terrestrial planet formation. On the other hand, recent works on the final stages of planetesimal-driven migration of the giant planets (e.g. "Nice model") suggest that an already excited belt would indeed survive, if planet migration was very swift, likely following a brief but effective instability episode. These results put constraints on the timing of formation of the asteroid belt that are met by the "Grand Tack" scenario, which attributes the redistribution of planetesimals in the inner solar system to a specific, early (gas-driven) migration pattern of the giant planets. An alternate model, assuming a more main-stream, gas-driven migration pattern that places the giant planets in a multi-resonant configuration, attributes the excitation of the belt to the giant planets having actually mildly chaotic orbits. This orbital state, which can last from a few to several hundred My, leads to consecutive crossings of secular resonances throughout the belt that can excite asteroids to high eccentricities and inclinations, given enough time. In this talk we are going to review these different dynamical formation models and discuss the specific conditions under which the formation of the belt can fit to a concrete scenario of solar system evolution.