

The origin of short period comets

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Our HST/ACS search of 0.02 sq deg of the invariable plane for distant solar system objects finds that the population of comet-sized bodies in the Kuiper Belt is far smaller than expected by extrapolation of the previously known luminosity function of brighter objects obtained by ground-based surveys. This population falls short, by 2-to-4 orders of magnitude, of the estimates based on dynamical models of the Kuiper Belt as a source of the Jupiter family short period comets (JFCs). The implication is that current dynamical models are incomplete in some essential respect. Possible explanations will be discussed.