Enumerativity of virtual Tevelev degrees

CARL LIAN AND RAHUL PANDHARIPANDE

Abstract. Tevelev degrees in Gromov-Witten theory are defined whenever there are virtually a finite number of genus-g maps of fixed complex structure in a given curve class β through n general points of a target variety X. These virtual Tevelev degrees often have much simpler structure than general Gromov-Witten invariants. We explore here the question of the enumerativity of such counts in the asymptotic range for large curve class β. A simple speculation is that for all Fano X, the virtual Tevelev degrees are enumerative for sufficiently large β. We prove the claim for all homogeneous varieties and all hypersurfaces of sufficiently low degree (compared to dimension). As an application, we prove a new result on the existence of very free curves of low degree on hypersurfaces in positive characteristic.

Mathematics Subject Classification (2020): 14H10 (primary); 14C17, 05A15 (secondary).