THE VIRTUAL FUNDAMENTAL CLASS FOR THE MODULI SPACE OF GENERAL TYPE SURFACES

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Time：Wed, Jul. 13, 10:00-11:00

Venue: Tencent Meeting 416 471 516, password: 247436

Abstract: Sir Simon Donaldson conjectured that there should exist a virtual fundamental class on the moduli space of surfaces of general type inspired by the geometry of complex structures on the general type surfaces. In this talk I will present a method to construct the virtual fundamental class on the moduli stack of lci (locally complete intersection) covers over the moduli stack of general type surfaces with only semi-log-canonical singularities. A tautological invariant is defined by taking the integration of the power of the first Chern class of the CM line bundle over the virtual fundamental class. This can be taken as a generalization of the tautological invariants on the moduli space of stable curves to the moduli space of stable surfaces.