

1057-14-224

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Gromov-Witten theory of etale gerbes.

Gromov-Witten theory of smooth Deligne-Mumford stacks was constructed in symplectic category by Chen-Ruan, and in algebraic geometry category by Abramovich-Graber-Vistoli. Let G be a finite group scheme, the G -gerbes over a smooth Deligne-Mumford stack X give very interesting Deligne-Mumford stacks. In this talk we will talk about the Gromov-Witten theory, especiously quantum cohomology of G -gerbes over the smooth Deligne-Mumford stacks. We prove the so called "decomposition conjecture" by physicists for quantum cohomology of root gerbes over smooth schemes. (Received January 23, 2010)