

# Refinement of Kool-Thomas invariants via Equivariant K-theoretic invariants

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We are defining a refinement of Kool-Thomas invariants via the K-theoretic invariants proposed by Nekrasov and Okounkov by introducing a K-theory class in the moduli space of stable pairs that contains the information of the incidence of a point and a curve. Our refinement contain the same information to the refinement of nodal curve counting on a surface defined by Goettsche and Shende. Assuming a conjecture by Goettsche and Shende, our invaraints and Goetsche-Shende invariants give the same refinement to the  $\delta$ -nodal curve counting. In this talk we will review the refined  $\delta$ -nodal curve counting by Goetsche anda Shende. We will review Kool-Thomas invariants and the Equivariant K-theoretic invariants defined by Nekrasov and Okounkov. Then we will give the definition of the incidence class. And finally, we will state our result.