
Refined enumerative invariants and lower bounds

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Résumé

Several problems in enumerative geometry can be studied using tropical geometry. One of them was investigated by G. Mikhalkin in his article published in 2015: how many real rational curves immersed in a toric surface are tangent to the toric boundary at given points with fixed intersection multiplicities? Counting those curves with Welschinger type signs produces a number independent of the choice of boundary points and gives rise to a lower bound for the actual number of real curves under consideration. The enumeration can be further refined according to the quantum index. It turns out that this invariant signed count admits a tropical expression and allows one to recover Block-Göttsche polynomial. I will explain how the tropical description can help to prove that the aforementioned lower bound is never achieved close to the tropical limit.

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