Abstract

We introduce a variant of stable logarithmic maps, which we call *punctured logarithmic maps*. They allow an extension of logarithmic Gromov–Witten theory in which marked points have a negative order of tangency with boundary divisors.

As a main application we develop a gluing formalism which reconstructs stable logarithmic maps and their virtual cycles without expansions of the target, with tropical geometry providing the underlying combinatorics.

Punctured Gromov–Witten invariants also play a pivotal role in the intrinsic construction of mirror partners by the last two authors, conjecturally relating to symplectic cohomology, and in the logarithmic gauged linear sigma model in work of Qile Chen, Felix Janda and Yongbin Ruan.