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*The (un)reasonable effectiveness of string theory in mathematics*

In recent decades, an impressive number of fascinating results (many of them still conjectural) in various areas of mathematics, such as geometry, topology and number theory, have been obtained via string theory and its dualities. In this talk, I will focus on a new mysterious recursive structure that appears to unify seemingly unrelated counting problems in geometry, with far-reaching and mostly unexplored consequences. We conjectured this new structure through a careful study of topological string theory and mirror symmetry, putting to work "the (un)reasonable effectiveness of string theory in mathematics".