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Introduction to homological mirror symmetry and the Fukaya category

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Homological mirror symmetry is a deep mathematical conjecture proposed by Maxim Kontsevich at the 1994 ICM in Zürich, and it is about a certain relationship between the two mathematical areas of symplectic geometry and algebraic geometry. More precisely, the conjecture states that there is a derived equivalence between the so-called Fukaya category in symplectic geometry, and the category of coherent sheaves which is well-studied in the field of algebraic geometry. The conjecture is an attempt at understanding mirror symmetry in string theory which is well-known by physicists.

In this talk I will first go through history and origins of the conjecture. After that, an introduction to symplectic geometry will be given and the goal will be to give the audience a feeling of what the Fukaya category is.

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