

The effective potential for string backgrounds from string geometry theory

Thursday, 30 November 2023 15:00 (15 minutes)

String geometry theory is one of the candidates of the non-perturbative formulation of string theory. In this theory, strings constitute not only particles but also the space-time. In this talk, in string geometry theory, we identify perturbative vacua in string theory, which include general string backgrounds. From fluctuations around these vacua, we derive the path-integrals of perturbative strings on the string backgrounds up to any order. Furthermore, the identification of the perturbative vacua enables us to obtain differential equations that determine an effective potential for string backgrounds. We solve the differential equations and obtain an effective potential explicitly up to the second order. In a generic region, we show that the minimum of the second order potential gives a non-trivial background. This fact supports that the full effective potential can determine the true vacuum in string theory. The urgent problem is to find the global minimum and we introduce both analytical and numerical methods.

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