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## Understanding the problem with logarithmic singularities in the complex Langevin method

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In recent years, there has been remarkable progress in theoretical justification of the complex Langevin method, which is a promising method for evading the sign problem in the path integral with a complex weight. There still remains, however, an issue concerning occasional failure of this method in the case where the action involves logarithmic singularities such as the one appearing from the fermion determinant in finite density QCD.

In this talk, we point out that this failure is due to the breakdown of the relation between the complex weight which satisfies the Fokker-Planck equation and the probability distribution generated by the stochastic process. In fact, this kind of failure can occur in general when the stochastic process involves a singular drift term. We show, however, in simple examples, that there exists a parameter region in which the method works although the standard reweighting method is hardly applicable.

**Primary author:** Dr SHIMASAKI, Shinji (KEK)

**Co-author:** Prof. NISHIMURA, Jun (KEK, SOKENDAI)

**Presenter:** Dr SHIMASAKI, Shinji (KEK)

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