

## Different Versions of Perturbation Expansion Based on the Single-Trajectory Quadrature Method

ZHAO Wei-Qin<sup>1,2</sup> and JU Chang-Sheng<sup>2</sup>

<sup>1</sup> China Center of Advanced Science and Technology (CCAST), World Lab., P.O. Box 8730, Beijing 100080, China

<sup>2</sup> Institute of High Energy Physics, the Chinese Academy of Sciences, P.O. Box 918(4), Beijing 100039, China

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**Abstract:** The newly developed single trajectory quadrature method is applied to a two-dimensional example. The results based on different versions of new perturbation expansion and the new Green's function deduced from this method are compared with each other, also compared with the result from the traditional perturbation theory. As the first application to higher-dimensional non-separable potential the obtained result further confirms the applicability and potential of this new method.

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**Key words:** single trajectory quadrature, new perturbation expansion, Green function

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