

Methods for calculating integrals with a singularity of type $1/(x-c)$ as applied to the two-photon decay of a neutral pion at finite temperatures

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Computation of the π^0 decay width at high temperatures in the framework of the Nambu-Jona-Lasinio model requires the calculation of an integral with singularity $1/(x-c)$. To solve the problem, the most suitable method must be found that can effectively bypass the singularity and allow to obtain an answer with a minimal error and the high computation speed. In this work were considered non-adaptive and adaptive methods based on the Gauss-Kronrod quadrature formula and the Monte Carlo integration method. As a result, the temperature behavior of the two-photon pion decay width was obtained.

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