

Modification of the Porter-Thomas distribution by rank-one interaction
Eugene Bogomolny, University Paris-Sud

Abstract

The Porter-Thomas distribution of resonance widths is one of the oldest and simplest applications of statistical ideas in nuclear physics. Previous experimental data confirmed it quite well but recent and more careful investigations show clear deviations from this distribution. To explain these discrepancies the authors of Ref.~[PRL **115**, 052501 (2015)] argued that to get a realistic model of nuclear resonances is not enough to consider one of the standard random matrix ensembles which leads immediately to the Porter-Thomas distribution but it is necessary to add a rank-one interaction which couples resonances to decay channels. The purpose of my talk is to solve this model analytically and to find explicitly the modifications of the Porter-Thomas distribution due to such interaction. Resulting formulae are simple, in a good agreement with numerics, and could explain experimental results.