

# Resonance phenomena in nature and how to calculate them

N. Moiseyev<sup>1</sup>

<sup>1</sup> *Technion, Haifa, Israel*

The different types of molecular autoionization resonances will be described (shape and Feshbach with and without external fields). The breaks down of the standard (hermitian Born Oppenheimer BO) will be explained and the conditions for the applicability of the non-hermitian BO approximation (NH-BOA) will be given. Based on the NH-BOA complex potential energy surfaces are calculated. The different methods for calculating them will be described. Last but not least the use of complex potential energy surfaces to calculate reaction cross sections for cold molecular collision experiments will be presented.