Eigenvalues of a self-adjoint operator $H_0 = H_0^*$ which are embedded in its continuous spectrum are known to be unstable under generic perturbations, $H_g = H_0 + gW$, with $g \neq 0$. This instability leads to the notions of *resonances* and *metastable states*: They are defined to be eigenvalues and eigenvectors, respectively, of an analytic family of (non-self-adjoint) operators which contains H_g as a distinguished element. Resonances, metastable states, and the construction of this analytic family by *complex deformations* will be introduced and discussed in the lecture on the example of an atom interacting with the quantized radiation field.