These scripts are part of the lecture materials for my courses on reactor physics at Technical University of Munich. 2011 – 2016. The software comes as is, only for educational purposes and no warranties. © Dr.Sdl

The neutron flux in a power reactor is not a pure constant but is fluctuation around a mean value. This comes from zero-power noise which is a signature of the stochastic nature of the neutron field. Then there are noise sources due to fluctuating boundary conditions: moderator temperature changes or fuel assembly pitch modulations create reactivity fluctuations and hence change the neutron field strength. Finally there are geometric sources which result from relative movements of neutron source and detector.

In this script we calculate the power spectrum of the neutron field of a point reactor in the frequency domain according to the following publication: Pazsit : integration of space - dependent noise induced by propagating perturbations, Ann.Nucl.En. 37 (2010) (<http://www.sciencedirect.com/science/article/pii/S0306454910001921>)