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

In the slowing-down region neutrons lose energy as a result of elastic scattering. Inelastic scattering may also contribute to the moderation, if the energy of the neutrons exceeds the first excitation level in the scattering nuclei. There is no distinct lower energy range for the slowing-down region, but below about 1 eV the thermal motion and binding forces of the moderator atoms become important. This marks the beginning of the thermalization region.

There are many ways to calculate the neutron energy spectrum in the slowing down region. It is easy for systems which do not have big resonances in this range and can be well approximated with analytical approaches. Whole books have been written on the subject, e.g. (<http://www.sciencedirect.com/science/book/9780080110141>) The Theory of Neutron Slowing Down in Nuclear Reactors A volume in International Series of Monographs in Nuclear Energy Joel H. Ferziger, P. F. Zweifel, J. V. Dunworth and D. J. Silverleaf ISBN: 978-0-08-011014-1

For systems with heavy nuclides or actinides which have many resonances Monte Carlo simulations are the method of choice. In this script with outline how such an approach works in principle.