Residual distribution schemes for neutron transport equation

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The contribution is devoted to the numerical methods for simulations of neutron transport. The motivation is to obtain robust algorithms for reactor physics problems. The mathematical model is based on time-dependent Boltzmann kinetic equation for neutrons which is approximated by spherical harmonics. The resulting system of linear hyperbolic partial differential equations is solved by high-resolution nonlinear muldimensional upwind numerical scheme. The developed scheme is based on ideas borrowed from the finite volume and finite element methods with approximate Riemann solvers. The quasi-linear implicit solver is devised. The application to the steady-state problems is discussed. 1D and 2D numerical experiments are presented.