On the Taylor Series Solution of the Reactor Point Kinetics Equations

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Abstract. A numerical solution of point reactor kinetics with multiple delayed neutron precursors groups is derived utilizing Taylor polynomials. This method is verified using step, ramp and sinusoidal reactivity inputs in C++ simulation compared to data available in literature. The effect of Taylor Remainder is studied and discussed. Impact of using a different Taylor Series order is observed. Limitations and possible improvements of this method are demonstrated.