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COMPARISON OF TIME STEPPING SCHEMES ON THE CABLE EQUATION

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Electrical propagation in excitable tissue, such as nerve fibers and heart muscle, is described by a parabolic PDE for the transmembrane potential $V(x,t)$, known as the cable equation. Its source term represents the total ionic current across the membrane, governed by the Hodgkin-Huxley or other more complicated ionic models. In this talk, we compare the performance of various high order time-stepping numerical schemes, including DuFort-Frankel and adaptive Runge-Kutta, on the cable equation.

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