(a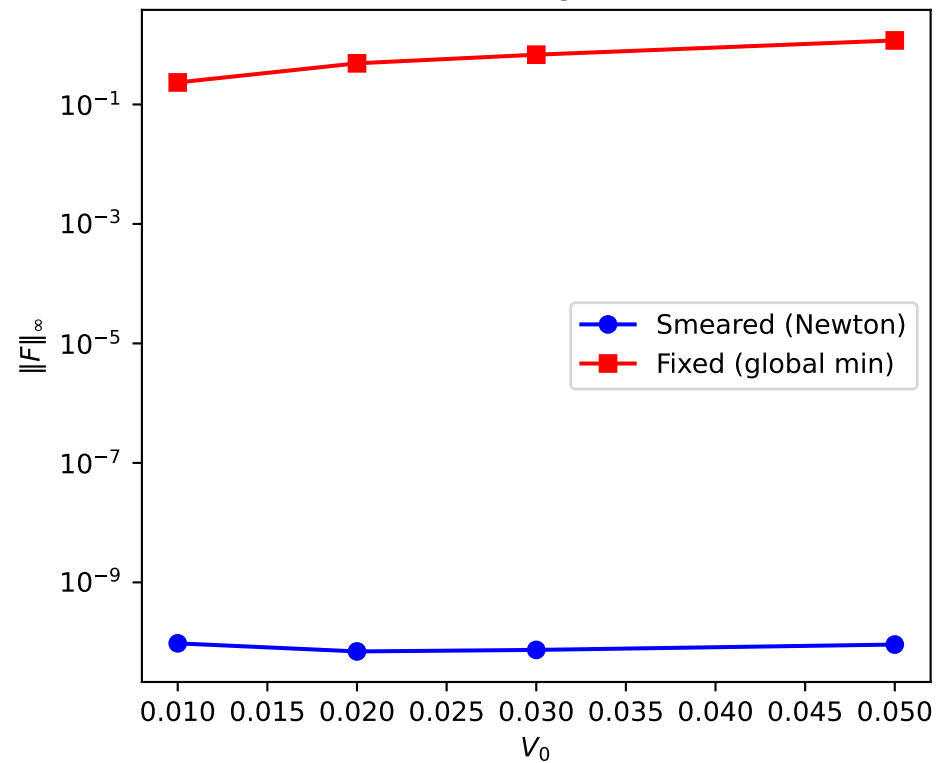) Residual: converged vs minimized — (b) Linearized Jacobian at $\Phi = 0$