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Maximum Caliber Analysis of Ion-Channel Gating ROY CAMPBELL, Walla Walla University — The principle of maximum caliber, MaxCal, is a generalization to nonequilibrium statistical mechanics of the principle of maximum entropy, MaxEnt. E. T. Jaynes introduced the MaxEnt approach to equilibrium statistical mechanics in 1957 and its MaxCal generalization in 1980. MaxCal has recently been used to derive dynamical laws of transport, analyze single particle two-state dynamics, and study few state models of non-equilibrium processes. We use MaxCal to analyze hidden Markov models of ion-channel gating and make logical inferences concerning the underlying dynamics. MaxCal is used to determine model parameters; test the adequacy of a model; and predict unmeasured quantities from the trajectory probability distribution. Results will be given for a MaxCal analysis of inositol trisphosphate receptor patch clamp data.

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