Hodgkin–Huxley model

The model equation of the Hodgkin–Huxley neuron are the following:

$$\begin{cases} I = C_m \frac{dV_m}{dt} + \bar{g}_K n^4 (V_m - V_K) + \bar{g}_{Na} m^3 h (v_m - V_{Na}) + \bar{g}_l (V_m - V_l) \\ \frac{dn}{dt} = \alpha_n(V_m)(1-n) - \beta_n(V_m) n \\ \frac{dm}{dt} = \alpha_m(V_m)(1-m) - \beta_m(V_m) m \\ \frac{dh}{dt} = \alpha_h(V_m)(1-h) - \beta_h(V_m) h \end{cases} \tag{1}$$

This is the dynamic: