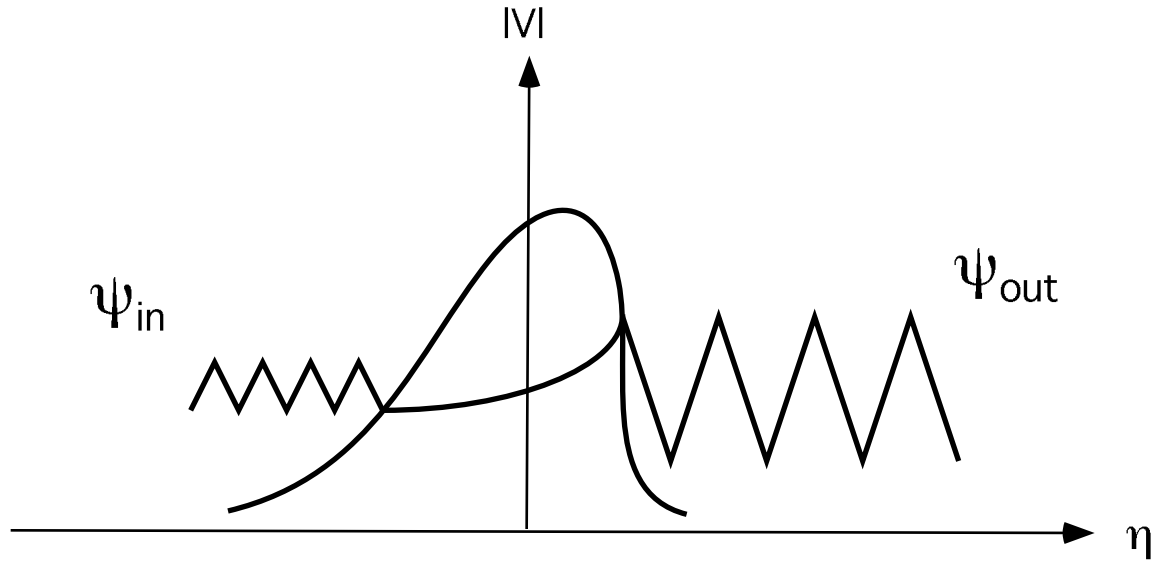

$\psi_{in} = e^{-ik\eta}$

$\psi_{out} = c_+ e^{-ik\eta} + c_- e^{+ik\eta}$