

**Optical model potential (imaginary part)**

Optical model potential (OMP) is a complex function depending usually on the distance between colliding nuclei. In the “Nuclear transfer reaction” section of NRV project the imaginary part of the OMP can be treated in the following forms:

**1. Woods-Saxon (volume) form:**

$$W(r) = \frac{W_0}{1 + \exp\left[\frac{r - R_W}{a_W}\right]},$$

where  $W_0 < 0$  is the depth of the potential,  $R_W = r_W A_T^{1/3}$  is its radius,  $A_T$  is the target mass number, and  $a_W$  is the diffuseness of the OMP.

**2. Woods-Saxon (surface) form:**

$$W(r) = -4a_D W_D \frac{d}{dr} \frac{1}{1 + \exp\left[\frac{r - R_D}{a_D}\right]},$$

where  $W_D < 0$  is the depth of the potential,  $R_D = r_D A_T^{1/3}$  is its radius, and  $a_D$  is the diffuseness of the OMP.

**3. Superposition form** is a sum of the volume and surface Woods-Saxon potentials.