$$\begin{pmatrix}\text{homogeneous}\\ \text{bimolecular}\end{pmatrix} \quad dS = \sin\theta \, d\theta \, d\phi \, dx \, dy \, dz \, R^2 \, dS_{int} \tag{35}$$

$$\begin{pmatrix}\text{homogeneous}\\ \text{unimolecular}\end{pmatrix} \quad dS = \sin\theta \, d\theta \, d\phi \, dx \, dy \, dz \, dS_{int} \tag{36}$$

$$(\text{heterogeneous}) \quad dS = dx \, dy \, dS_{int} \tag{37}$$

where θ and ϕ define a body-fixed axis of the complex, R is the distance of two atoms or any two points of the complex on this axis, and x, y, z have been defined earlier. In the computation of dS_{int} in (35) the two atoms or points are constrained so that one is fixed on the cited body-fixed axis and the other can move only along that axis. The two points can be the centers of mass of each reactant, for example (Appendix II). In the compution of the dS_{int} of (37) one point of the complex is constrained to move along any fixed line normal to the xy plane parallel to the solid-liquid interface. This point can be the center of mass of the reactant.

Similarly, the volume element dV in (33) can be shown to be the product of volume elements $\prod_a dx_a \, dy_a \, dz_a$ for the external coordinates of all reactants a and of dV_{int}, the volume element of all remaing coordinates. (There is only one term in $\prod_a$ when the reaction is unimolecular, of course.) These remaining coordinates are cordinates in a space where the center of mass of each reactant is fixed and where the reactants are far apart.

Integration may now be performed over the external coordinates