$$\frac{N_0}{4}\int\limits_0^\infty r^2dr\int\limits_0^\pi \sin\theta_1 d\theta_1\int\limits_0^\pi \sin\theta_2 d\theta_2\int\limits_0^{2\pi}\left(1-\exp\left(-\frac{U\left(r,\theta_1,\theta_2,\varphi\right)}{kT}\right)\right)d\varphi$$

$$\begin{aligned} r &= \tan\left(\frac{\pi}{2}\hat{r}\right) \\ \theta_1 &= \pi\hat{\theta}_1 \\ \theta_2 &= \pi\hat{\theta}_2 \\ \varphi &= 2\pi\hat{\varphi} \end{aligned} \qquad \begin{aligned} \hat{r} &= \frac{2}{\pi}\arctan\left(r\right) \\ \hat{\theta}_1 &= \frac{1}{\pi}\theta_1 \\ \hat{\theta}_2 &= \frac{1}{\pi}\theta_2 \\ \hat{\varphi} &= \frac{1}{2\pi}\varphi \end{aligned}$$

$$\frac{N_0}{4}\int\limits_0^1 \frac{\pi}{2}r^2\left(1+r^2\right)d\hat{r}\int\limits_0^1 \pi\sin\theta_1 d\hat{\theta}_1\int\limits_0^1 \pi\sin\theta_2 d\hat{\theta}_2\int\limits_0^1 2\pi\left(1-\exp\left(-\frac{U\left(r,\theta_1,\theta_2,\varphi\right)}{kT}\right)\right)d\hat{\varphi}=$$

$$=\frac{N_0\pi^4}{4}\int\limits_0^1 r^2(1+r^2)d\hat{r}\int\limits_0^1 \sin\theta_1 d\hat{\theta}_1\int\limits_0^1 \sin\theta_2 d\hat{\theta}_2\int\limits_0^1\left(1-\exp\left(-\frac{U\left(r,\theta_1,\theta_2,\varphi\right)}{kT}\right)\right)d\hat{\varphi}$$