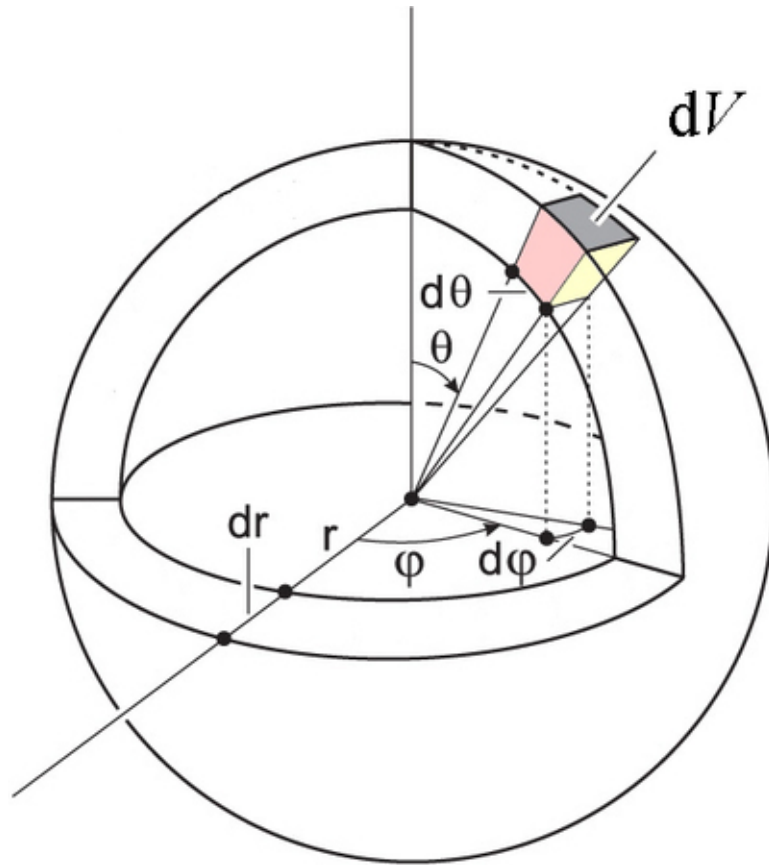


Spherical coordinates and volume element



spherical coordinates :

$$x=r \sin\theta \cos\phi$$

$$y=r \sin\theta \sin\phi$$

$$z=r \cos\theta$$

$$dV=dx dy dz$$

$$dV=r^2 \sin\theta \, d\theta \, d\phi \, dr$$