

$z$

$$d\Omega = \sin \theta d\theta d\phi$$

$$r \sin(\theta) d\phi$$

$$r d\theta$$

$\theta$



The diagram illustrates a differential solid angle element  $d\Omega$  in a 3D coordinate system. A vertical  $z$ -axis is shown on the left. A line segment originates from the origin and extends into the 3D space. The angle between the  $z$ -axis and this line segment is labeled  $\theta$ . A dashed line follows the path of this segment. At a distance  $r$  from the origin, a small rectangular area is drawn, representing the differential area element. The width of this rectangle, measured along the direction of increasing  $\theta$ , is labeled  $r d\theta$ . The length of the rectangle, measured along the direction of increasing  $\phi$  (perpendicular to the  $z$ -axis), is labeled  $r \sin(\theta) d\phi$ . The entire figure is rendered in black lines on a white background.