逆天的积化和差推导

由三角和差公式得

$$\sin(\theta + \phi) = \sin(\theta)\cos(\phi) + \cos(\theta)\sin(\phi)$$

$$\sin(\theta - \phi) = \sin(\theta)\cos(\phi) - \cos(\theta)\sin(\phi)$$

故

$$\sin(\theta)\cos(\phi) = \sin(\theta + \phi) - \cos(\theta)\sin(\phi)$$

$$= \sin(\theta + \phi) + \sin(\theta - \phi) - \sin(\theta)\cos(\phi)$$

整理得

$$2\sin(\theta)\cos(\phi) = \sin(\theta + \phi) + \cos(\theta + \phi)$$

即

$$\sin(\theta)\cos(\phi) = \frac{1}{2}[\sin(\theta + \phi) + \cos(\theta - \phi)]$$

Q.E.D