Let v_n be the vector pointing at an angle $n\frac{\pi}{2}$; that is,

$$v_n = (\cos n\frac{\pi}{2}, \sin n\frac{\pi}{2})$$

Suppose we have two vectors, v_m and v_n. Their average is

$$\bar{v} = \frac{1}{2}(v_m + v_n) = \frac{1}{2}(\cos m\frac{\pi}{2} + \cos n\frac{\pi}{2}, \sin m\frac{\pi}{2} + \sin n\frac{\pi}{2})$$

The angle of this vector is

$$\tan^{-1} \frac{\sin m\frac{\pi}{2} + \sin n\frac{\pi}{2}}{\cos m\frac{\pi}{2} + \cos m\frac{\pi}{2}}$$