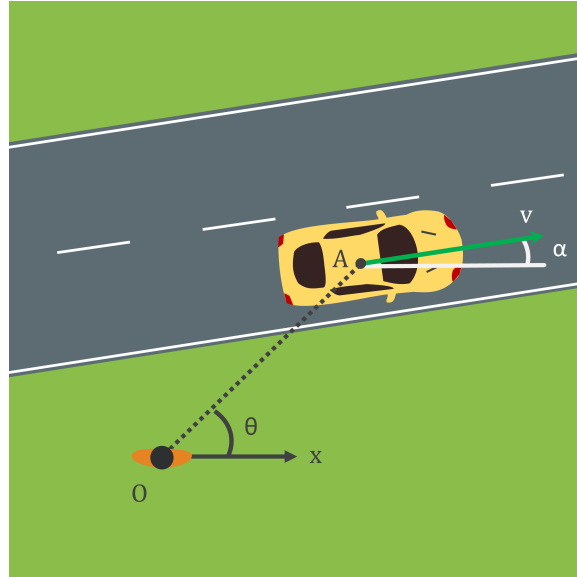


## Observing a Car



An observer at O is watching a car that is moving with a velocity  $v$  at an angle of  $\alpha = 15^\circ$ . Decompose the velocity of the car to the radial axis round O if the observer is exactly looking from an angle of  $\theta = 45^\circ$  at the car.

*Given:*

Angle:  $\alpha = 15^\circ$

Angle:  $\theta = 45^\circ$

Velocity vector:  $v$

*Solution:*

Moving the velocity vector down (see Figure 1), it can be seen that the remaining angle between  $v$  and the radial axis is  $\beta$ . Where  $\beta = \theta - \alpha = 45^\circ - 15^\circ = 30^\circ$ .

Using basic trigonometry of a right triangle, it follows that:

$$v_r = v \cos \beta \quad \Rightarrow \quad v_r = v \cos(30^\circ) \quad (1)$$

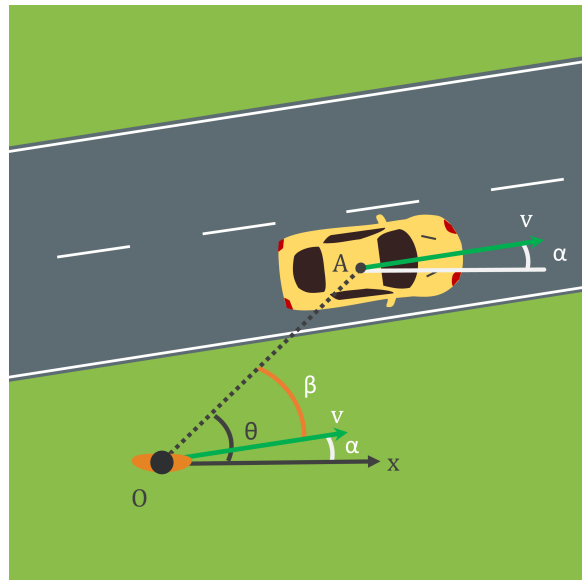


Figure 1: Observing a Car