

Mathematical Physics — PHZ 3113
Sailboat (Homework January 11, 2013)

Name (print):

One of the major inventions of mankind (not known in the antique) was the keel (or skeg in dinghies), which allows sailing boats to zigzag against the wind. Below you find a sketch for the basic idea, where

$$0 < \beta < \alpha < \frac{\pi}{2} \tag{1}$$

holds for the angles. Calculate the forward component \vec{F}^b from the wind force \vec{F} on the boat under the assumption that friction and perpendicular drift of the boat can be neglected.