



Figure 1: Schematic of model domain denoting two frames of reference points. Origin for the full frame is Cartesian  $(x, z)$  and sets the origin directly beneath the south pole of the drop and aligned to an unperturbed bath free surface. The droplet will be evolved in a moving frame of reference with polar coordinates  $(r, \theta)$  centered at the center of mass of a drop whose free surface lies at  $r = R_0$ , and  $\theta = 0$  pointing vertically downwards towards the bath.