Fig. 6 Local polar descriptor of entities detected as moving object in up (left) and down (right) radar images.

distance. So the longer the range of the detection is, the lower the true positive rates of moving object detection are.

At the end of this detection step, each potential moving object detected (noted \( O \)) is initialized as follows: \( O = [X_o, V_o, p_o] \) where \( X_o = (x_o, y_o) \) is the position of the object in the radar frame, \( V_o = (V_{ox}, V_{oy}) \) is the object’s velocities and \( p_o \) is the probability of being a mobile object. This probability is obtained based on the detector characterization and varies according to the distance from the radar.

7 Tracking of moving objects

Each moving object detection is compared and associated to the list of existing moving objects in order to update or create a new track. This Detection association is based on the classical Mahalanobis distance taking into account both position and Doppler measurement along with their uncertainties. For each po-