

The goal of this thesis is to collect various properties of sets with positive reach and to describe generalization of the directional curvatures in \mathbb{R}^3 as the intersection of a plane and a set with positive reach. Firstly, we define sets with positive reach, their Tangent and Normal cones, show basic properties accompanied by some characterizations of sets with positive reach. Then, we generalize principal curvatures for sets with positive reach and describe generalization of Euler's identity about normal curvature in \mathbb{R}^3 .