LECTURES ON LIPSCHITZ GEOMETRY OF SINGULARITIES

LAURENŢIU PĂUNESCU

LECTURE I

Classically, in what concerns the right-equivalence of 2-variable function germs, in the Topological category one may derive a bijective correspondence of a certain partition of the polar quotients. Passing to the Lipschitz category, we will explain how this bijective correspondence may be refined in terms of the gradient canyons, as follows: the tracking of the contact orders of the polar arcs and of the roots of a holomorphic 2-variable germ induces a natural partition of the set of polar arcs into clusters, in such a way that the classical bijective correspondence of branches of topologically right-equivalent function germs induces a bijective correspondence of those new clusters.

LECTURE II

Combining analytic and geometric viewpoints on the concentration of the curvature of the Milnor fibre, we show that Lipschitz homeomorphisms preserve the zones of multi-scale curvature concentration as well as the gradient canyon structure of holomorphic functions of two variables. In particular, we obtain the first new Lipschitz invariants after those discovered by Henry and Parusinski in 2003.

Time permitting, we may push the discussion to the case of 3 variables.

(1) P. Migus, L. Păunescu, M. Tibăr, *Clustering polar curves*, Topology Appl. 313 (2022), Paper 107991.

(2) L. Păunescu, M. Tibăr, *Concentration of curvature and Lipschitz invariants of holomorphic functions of two variables*. J. London Math. Soc. 100 (2019) no.1, 203-222.

L. PĂUNESCU: DEPARTMENT OF MATHEMATICS, UNIVERSITY OF SYDNEY, SYDNEY, NSW, 2006, AUSTRALIA

Email address: laurentiu.paunescu@sydney.edu.au