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Global smoothing of a subanalytic set

Semialgebraic and subanalytic sets have become ubiquitous in mathematics since their introduction by Łojasiewicz in the 1960s, following the celebrated Tarski-Seidenberg theorem on quantifier elimination. I will discuss two long-standing questions in real-analytic geometry, on global smoothing of a subanalytic set (an analogue of resolution of singularities), and on transformation of a proper real-analytic mapping to a mapping with equidimensional fibres by global blowings-up of the target (a classical result of Hironaka in the complex-analytic case).

These questions are related: a positive answer to the second can be used to reduce the first to the simpler semianalytic case. It turns out that the second question has a negative answer, in general, and that the first problem nevertheless has a positive solution. (Work in collaboration with Adam Parusiński.)