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Towards the global bifurcation theory on the plane

Yulij Ilyashenko
Independent Moscow University,
Moscow, Russian Federation
e-mail: yulijs@gmail.com

Local bifurcation theory (in what follows we will talk about the plane only) is related to transfigurations of phase portraits of differential equations. Currently this theory is almost completed. Nonlocal theory is related to bifurcations of separatrix polygons (polycycles). Though in the last 30 years there were obtained many new results, this theory is far from being completed. Recently it was discovered that nonlocal theory contains another substantial part: a global theory. New phenomena are related with appearance of the so called sparkling saddle connections. The aim of the talk is to explain first results of the new theory and discuss numerous open problems.