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Title: *"Melnikov-type method for splitting of separatrices for an explicit range of small parameter"*

Abstract. We present a Melnikov type approach for establishing transversal intersections of stable/unstable manifolds of perturbed normally hyperbolic manifolds. The method is based on geometric estimates on the manifolds to obtain bounds on their first and second derivatives, and on rigorous, interval arithmetic integration of ODEs. The benefit from our approach is the following. We do not need to know the explicit formulas for the homoclinic orbits prior to the perturbation. We also do not need to compute any integrals along such homoclinics. All needed bounds are established using rigorous computer assisted numerics. Lastly, and most importantly, we establish intersections for an explicit range of parameters, and not only perturbations that are "small enough", as is the case in the classical approach.

Joint work with Maciej Capinski.