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## Differentials in spectral sequences for Morse decompositions

Piotr Bartłomiejczyk (University of Gdańsk)

It is well known from the Conley Index Theory that the flow-defined boundary map in the long exact sequence of the attractor-repeller pair provides some information on the structure of the connecting orbit set. Namely, if the flow-defined boundary map is nonzero, then there is a connecting orbit from the repeller to the attractor. Since spectral sequences are a natural generalization of exact sequences, our purpose is to extend the above result to spectral sequences for Morse decompositions. More precisely, we prove that if the differential  $d_p^r$  in the spectral sequence for the Morse decomposition  $\{M_k\}_1^n$  is nonzero, then there exists a time arrow preserving sequence of connecting orbits between Morse sets  $M_p$  and  $M_{p-r}$ .