

**Paweł Pilarczyk**

IST Austria, Austria

pawel.pilarczyk@ist.ac.at

We define the homomorphism induced in homology by a closed correspondence between topological spaces. For that purpose, we use projections from the graph of the correspondence to its domain and codomain. We focus on correspondences that naturally emerge from combinatorial approximations of continuous maps obtained either by means of rigorous numerics or by an attempt to reconstruct the map from a finite set of data points. We show that under certain assumptions, the homomorphism induced by an outer approximation of a continuous map coincides with the homomorphism induced in homology by the map itself. In particular, our results provide a generalization of the work by Mischaikow, Mrozek and Pilarczyk, published in *Found. Comput. Math.*, Vol. 5, 2005 (pp. 199-229).

*Joint work with Shaun Harker (Rutgers University, USA), Hiroshi Kokubu (Kyoto University, Japan) and Konstantin Mischaikow (Rutgers University, USA).*