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Dynamical approximations of postsingularly finite entire maps

In this talk, I will focus on entire maps of finite type, i.e., maps having finitely many singular values. For such a map, the dynamics of its singular values can tell us a lot about its global dynamics. In particular, one can start by considering the “easy” case of maps with every singular value being (pre-) periodic. These maps are called postsingularly finite, and they are of particular interest due to their strong properties and the fact that they can help understand the dynamics of maps of finite type in more general cases.

In joint work with M. Mukundan and B. Reinke, we have proved that any postsingularly finite map can be naturally approximated (in the sense of uniform convergence on compacts) by a sequence of postsingularly finite polynomials. One can call these approximations “dynamical approximations” because they preserve several dynamical properties (and the dynamics of postsingularly finite polynomials is well-understood). To obtain this result, we have established a connection between approximations by postsingularly finite maps, their combinatorics, and certain maps acting on Teichmüller spaces.