Kolokviální přednáška proběhne 25.9.2018 od 16:00 v posluchárně M1.

John P. D'Angelo (Professor at University of Illinois, PhD from Princeton, 1976)

Title: Rational CR maps between spheres: a compressed sensing problem.

Abstract:
I will discuss aspects of the theory of proper holomorphic mappings between balls and connections with other branches of mathematics. Such mappings arise for several reasons; one is that the unit sphere admits many symmetries, and many mappings exist, especially when the target dimension is large compared with the domain dimension. When the source dimension is at least two, and a proper map is smooth up to sphere, it must be a rational mapping. Classification of such rational mappings is difficult; this problem leads to group theory, algebraic combinatorics, compact operator theory, and so on. The primary focus of the talk will be on the degree estimate problem in two or more dimensions; the idea is to bound the degree of such a rational mapping in terms of an explicit function of the source and target dimensions. Equivalently, one could seek a lower bound for the target dimension given the degree. Doing so leads to a problem in compressed sensing. The sharp bounds are known only in the case of monomial maps. I will discuss joint work I have done on this problem with two Czech co-authors. The talk will be accessible to advanced undergrads, because I will spend most of the time in source dimension two.