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A notion of negative curvature for domains in $\mathbb{C}^n$

Given a metric space, there are several notions of it being negatively curved. In this talk, we single out a weak notion of negative curvature (which, in fact, is an outcome of negative curvature in the Riemannian category) that turns out to be very useful in proving results about holomorphic maps. This notion, called visibility, is based on the Kobayashi distance. We shall refer to the Wolff–Denjoy theorem – whose extension to higher dimensions was previously shown only for certain convex domains and for strongly pseudoconvex domains – as an example of how this notion is useful. It is usually (very) hard to deduce whether the Kobayashi distance on a domain in $\mathbb{C}^n$, $n \geq 2$, has this or that metrical property. Therefore, we shall discuss at some length sufficient conditions for a domain to have the visibility property alluded to. This represents joint work with Andrew Zimmer and Anwoy Maitra.