### On the failure of the Denjoy–Wolff theorem in bounded convex domains

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In this talk, based on a work in progress with Yekta Okten, I will discuss the Denjoy–Wolff theorem in bounded convex domains. More precisely, let's say that a bounded domain $D$ has the Denjoy–Wolff property if the iterates of any holomorphic self-map of $D$ without fixed points converge to a boundary point. Several authors worked on the question of characterizing bounded convex domains which have the Denjoy–Wolff property. For instance, it is known that if $D$ is sufficiently smooth and linearly strongly convex (Abate, Abate and Raissy), or if $D$ is Gromov hyperbolic with respect to the Kobayashi distance (Gaussier, Zimmer and the speaker), or, more generally, if it is visible (Bharali–Maitra) then it has the Denjoy–Wolff property. Visibility in general is just a sufficient condition for the Denjoy–Wolff property, but it is not necessary, as one can construct a bounded simply connected (not convex) domain in $\mathbb{C}$ with the Denjoy–Wolff property but failing to be visible. However, I conjectured some years ago that for bounded convex domains visibility is equivalent to the Denjoy–Wolff property. The conjecture is still open, mainly because it is rather hard to characterize geometrically bounded convex domains which are visible. In this talk I will present a construction which shows that if a bounded convex domain $D$ has a real segment in the boundary which is contained in an affine disc (a "real-complex segment") and contains an "edge" with sufficiently large aperture having such a real-complex segment on the boundary, then $D$ does not have the Denjoy–Wolff property. This in particular applies to all bounded convex domains containing an analytic disc $E$ on the boundary. In this latter case I will also show that the target set (the set of accumulation points of the iterates of a holomorphic self-map) can be essentially whatever connected picture in $E$. I will also discuss some ideas about geometric features of visibility and Denjoy–Wolff property in convex domains.