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Kasra Rafi*, Department of Mathematics, 40 St. George Street, Toronto, ON M5S 2E4, Canada,
and **Maxime Fortier Bourque**. *Balls in Teichmüller space are not convex*. Preliminary report.

We prove that when $3g - 3 + p > 3$, the Teichmüller space of the closed surface of genus g with p punctures contains balls which are not convex in the Teichmüller metric. We analyze the quadratic differential associated to a Teichmüller geodesic and, as a key step, show that the extremal length of a curve (as a function of time) can have a local maximum. (Received January 06, 2016)