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Bruce M Solomon* (solomon@indiana.edu), Math Department, Indiana University,
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A skewloop is a smooth loop in 3-space with no two tangent lines parallel.

Surprisingly, the absence of skewloops near a point p of positive Gauss curvature K on a surface $M \subset \mathbf{R}^3$ makes M quadric near p . For when M is non-quadric near p and $K(p) > 0$, one can construct skewloops on it by perturbing small geometric ellipses near p (Ghomi/Solomon 2002).

We can now show the situation to be quite different when $K < 0$. Specifically, when $K(p) < 0$ one cannot obtain a skewloop near p by perturbing any small (but not too eccentric) ellipse.

Strict negativity of $K(p)$ seems necessary here: on the Monkey Saddle, where $K \leq 0$ vanishes at just one point, we can find small, almost circular skewloops surrounding that point. (Received September 14, 2010)