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**Teck C. Lim\*** (tlim@gmu.edu). *Fixed points of Nonexpansive Maps on the Hilbert sphere*. Preliminary report.

Let  $S$  be the unit sphere of a Hilbert space  $H$ , i.e.  $S = \{x \in H : \|x\| = 1\}$ . Let the metric on  $S$  be the geodesic metric  $d$ . If  $K$  is a nonempty closed geodesic convex subset of  $S$  with geodesic diameter strictly less than  $\pi/2$ , then every nonexpansive selfmap of  $K$  has a fixed point. An example shows that the theorem fails if diameter of  $K$  is greater than or equal to  $\pi/2$ . Our methods also show how fixed points can be approximated. (Received January 12, 2012)