Re: Homotopic maps

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- *Date*: Sat, 26 Nov 2005 14:00:07 +0000 (UTC)

Your claim is correct at least for flat embeddings. Here's why:

Let U be an open subset of R^n and suppose that S \subset U is a flatly embedded S^{n−1} which is null homotopic by a homotopy h: S x I −−> U. Let D be the bounded complementary domain of R^n − S so that S \cup D is a closed n−ball (since S is flat). Note that if D is a subset of h(S x I) we are done − so assume that h(S x I) misses a point of D. Since D is not contained in U let r: U \to U−D be the radial retraction of S \cup D − point onto S. Since S \cup D is a ball, there is a retraction R of U onto S \cup D. It then follows that r R h : S x I −−> S is a null homotopy of the identity of S, which is a contradiction.

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- ***References***:
  - ***Re: Homotopic maps***
    - *From:* Maury Barbato

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