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Circles and Clifford algebras

We study smooth maps from an open subset of $\mathbf{R}^m$ to an open subset of $\mathbf{R}^n$ that take germs of straight lines to germs of circles. "Degenerate circles", *i.e.* lines or points, are counted as circles. We give a construction of such maps based on representations of Clifford algebras. It provides a complete purely geometric description of Clifford algebras representations in terms of circles.