Approximation and homotopy in real algebraic geometry

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Abstract. I will discuss the following question. Which nonsingular real algebraic varieties Y have the *regular approximation property*: For any nonsingular real algebraic variety X, every C^∞ map f: X→Y homotopic to some regular map can be approximated in the C^∞ topology by regular maps. In particular, we will consider maps with values in linear real algebraic groups and in homogeneous spaces for such groups.