

Toroidalization of maps of 3-folds

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Dijous 16 de Juny de 2005

Suppose that f is morphism of nonsingular 3-folds X to Y . We show that there exist sequences of blow ups of points and nonsingular curves X_1 to X and Y_1 to Y such that the induced rational map F_1 from X_1 to Y_1 is a toroidal morphism. In particular, f_1 is locally (formally) a monomial mapping. We discuss open problems on toroidalization and applications.