

# Algebraic Geometry — Seminar —

## THE SARKISOV PROGRAM

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### Abstract

The minimal model program predicts that for any complex projective manifold  $X$ , there exists a sequence of well understood birational maps (flips and divisorial contractions) whose output  $X'$  is either

1. a minimal model (i.e.  $K_{X'} \cdot C \geq 0$  for any curve  $C \subset X'$ ), or
2. admits a Mori fiber space  $f : X' \rightarrow S$  (i.e. a surjective morphism with connected fibers such that  $\rho(X'/S) = 1$ ,  $\dim X' > \dim S$  and  $-K_{X'} \cdot C > 0$  for any curve  $C \subset X'$  contracted by  $f$ ).

Kawamata has shown that any two minimal models are connected by a finite sequence of flops. We will explain a similar result for Mori fiber spaces known as the Sarkisov program: If  $X$  is a complex projective manifold  $X' \rightarrow S'$  and  $X'' \rightarrow S''$  are two Mori fiber spaces given by running a  $K_X$  minimal model program, then the rational map  $X' \dashrightarrow X''$  may be factored by a finite sequence of Sarkisov links. (This is joint work with J. McKernan. No prior knowledge the minimal model program will be assumed in this talk. )