

K - simplicial complex

Discrete Morse Function

A.M.T. Following
R. Forman
of Rice U.

$f: K \rightarrow \mathbb{N}$ s.t.

$$\forall \alpha^d \quad |\{\beta^{d+1} \supset \alpha^d : f(\beta) \leq f(\alpha)\}| \leq 1$$

$$|\{\gamma^{d-1} \subset \alpha^d : f(\gamma) \geq f(\alpha)\}| \leq 1$$

Def α^d is critical if both sets are empty.

Then K with $f \Rightarrow K$ is homotopy equiv.
to a subset of the critical vertices.
(more precisely, to a CW-complex with
one cell for each critical simplex
of K)