1023-14-118   **Marina Bertolini** (`marina.bertolini@mat.unimi.it`), Dipartimento di Matematica, Universita' degli Studi di Milano, Milano, Italy, **GianMario Besana*** (`gbesana@cti.depaul.edu`), School of CTI, Depaul University, 243 S Wabash, Chicago, IL 60604, and **Cristina Turrini** (`cristina.turrini@mat.unimi.it`), Dipartimento di Matematica, Universita' degli Studi di Milano, Milano, Italy. *Instability of projective reconstruction from 1-view in higher dimension.* Preliminary report.

A geometrically interesting issue in applications of algebraic geometry to computer vision is the determination of *critical configurations* for reconstruction of 3D scenes. Are there configurations of points that turn out to be critical in the sense that they prevent successful reconstruction or allow for multiple possible solutions? The first and third author previously extended the study of critical configurations for one view to the case of higher dimensions. Varieties that appear as loci of critical configurations are generalized cones of dimension $k - 2$ and degree 3. They are a natural generalization of the twisted rational cubic, known to be the critical locus for reconstruction from 1-view in $\mathbb{P}^3$.

The concretely relevant aspect of the story is the analysis of what happens for configurations that are "close" to a critical one. It turns out that the solution given by the reconstruction algorithm is not stable, that is to say that small perturbations of the data may change the reconstruction drastically.

The presenter will describe in detail a number of simulated experiments, performed using MATLAB, and report results proving instability phenomena near critical configurations in all cases. (Received August 01, 2006)