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A. Tchernev* (atchernev@albany.edu) and **M. Varisco** (mvarisco@albany.edu). *Betti categories*. Preliminary report.

We introduce the notion of a Betti category. We show that for graded modules with sufficiently good combinatorial description the corresponding Betti category completely determines the Betti numbers and also the structure of the minimal free resolution of the module in the following sense: if two such modules have isomorphic Betti categories then the minimal free resolution of one can be obtained from the minimal free resolution of the other by a functorial procedure. When applied to monomial ideals, this recovers a previous result of the authors about Betti posets of monomial ideals. When applied to toric ideals, this result shows that the Betti category of a toric ideal is a discrete combinatorial object that plays a role analogous to the role played by the lcm-lattice for monomial ideals. (Received January 20, 2015)