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Adam Boocher, **Alessio D'Ali** and **Jonathan Montaño*** (jmontano@purdue.edu), 150 N. University Street, West Lafayette, IN 47907, and **Eloisa Pires** and **Alessio Sammartano**.
Deviations of graded algebras. Preliminary report.

Let $S = k[x_1, \dots, x_n]$ be a polynomial ring over a field k and $R = S/I$ for some proper homogeneous S -ideal I . The deviations of R are the natural numbers $\{\varepsilon_i(R)\}_{i \geq 1}$, where $\varepsilon_i(R)$ is the number of variables added in the i th step in the construction of the minimal Tate resolution of k over R . These numbers completely determine the Poincaré series of k and measure how far is R from being regular or complete intersection. In this talk, I will report work in progress joint with A. Boocher, A. D'Ali, E. Pires, and A. Sammartano, where we study extremal deviations and the behavior of deviations in families of ideals. In addition, we compute a significant number of deviations for some class of edge ideals and use this information to explicitly find the minimal algebra generators of the Koszul homology of k over R . (Received September 13, 2014)