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Pedro Teixeira* (pteixeir@knox.edu), Knox College, Mathematics Department, Box K-114, Galesburg, IL 61401. *Triple resultants and the explicit calculation of certain Hilbert-Kunz series*. Preliminary report.

The notion of *syzygy gap*—the difference between the degrees of the two generators of $\text{Syz}(F, G, H)$, where F , G and H are homogenous polynomials in two variables with no common factor—has been used effectively in the theory of Hilbert-Kunz functions and multiplicities, in conjunction with the theory of *p-fractals*. In particular, certain *p-fractals* defined in terms of syzygy gaps have been used in the proof of rationality of the Hilbert-Kunz series of various hypersurfaces. These *p-fractals* are known to be completely determined by their zeros, and these zeros, in their turn, are determined by the non-vanishing of certain determinants that resemble the classical Sylvester resultant—the *triple resultants*. In this talk we will introduce triple resultants and show how they relate to the rationality of certain Hilbert-Kunz series and allow their explicit/automatic calculation. (Received June 19, 2007)