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T. Kyle Petersen* (tpeter21@depaul.edu), Department of Mathematical Sciences, DePaul University, 2320 N. Kenmore, Chicago, IL 60614, and **Eran Nevo**, Department of Mathematics, Cornell University, Ithaca, NY 14853. *Combinatorial interpretations for γ -vectors.*

Gal has conjectured that the h -polynomial of any flag homology sphere has a nonnegative expansion in the so-called γ -basis: $\{t^i(1+t)^{n-2i}\}$, where n is the degree of $h(t)$. We show that in many cases (e.g., for Coxeter complexes) the γ -vector is not simply nonnegative, but it is in fact a *Kruskal-Katona vector*. That is, the γ -vector is the f -vector of some other simplicial complex. We conjecture the same to be true of any flag homology sphere, refining significantly Gal's conjecture.

The first example here is the h -polynomial of the type A_n Coxeter complex, better known as the *Eulerian polynomial*: the generating function for descents of permutations in S_{n+1} . (Received September 08, 2009)