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Victor Reiner. *Generalized Degree Sequences and Plethysm.*

We begin by recalling the well-known connection between graphical degree sequences and the $k = 2$ case of the problem of expanding plethysms $e_m[e_k]$ of elementary symmetric functions in terms of Schur functions s_λ . This problem was solved by the identity due to Littlewood:

$$\sum_{\substack{\text{all simple} \\ \text{graphs } K}} x^{d(K)} \left(= \prod_{i < j} (1 + x_i x_j) = \sum_{m \geq 0} e_m[e_2] \right) = \sum_{\substack{\text{shifted} \\ \text{graphs } K}} s_{d(K)}.$$

We show that the natural generalizations for $k > 2$ in terms of arbitrary shifted families, while not being equal, do have many properties in common. In particular, they have the same monomial support, extra symmetries and the Schur expansions for the plethysm is coefficientwise larger than for the shifted families.

We end with a conjecture on further relations between these expansions. (Received August 11, 2008)