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Dual sequences arising from apolarity. Preliminary report.

We discuss a pair of dual operations passing between non-decreasing sub-additive sequences with infinite limit and non-decreasing super-additive sequences with infinite limit. We show that the initial degree sequence of the symbolic powers of an ideal defining a variety X is dual via this operation to the regularity of a family of ideals generated by powers of linear forms dual to the points of X . Thus the regularity of such families of ideals is intimately tied to the Waldschmidt constant of the ideal defining X . In the case of a squarefree monomial ideal, this duality recovers a result of Bocci et. al. relating the Waldschmidt constant to the fractional chromatic number. This is a preliminary report on joint work with Alexandra Seceleanu. (Received January 17, 2021)