1147-13-801 **Paul Baginski*** (pbaginski@fairfield.edu), Dept. of Mathematics, Fairfield University, 1073 North Benson Rd., Fairfield, CT 06824. *Nonunique factorization in the ring of integer-valued polynomials.*

The ring of integer-valued polynomials $\text{Int}(\mathbb{Z})$ is the set of polynomials with rational coefficients which produce integer values for integer inputs. Specifically,

$$\text{Int}(\mathbb{Z}) = \{f(x) \in \mathbb{Q}[x] \,|\, \forall n \in \mathbb{Z} \;\; f(n) \in \mathbb{Z}\}.$$

$\text{Int}(\mathbb{Z})$ constitutes an interesting example in algebra from many perspectives; for example, it is a natural example of a non-Noetherian ring. It is also a ring with nonunique factorization. It is a finite factorization domain with infinite elasticity. Frisch recently demonstrated that in $\text{Int}(\mathbb{Z})$, you can find an element $f(x)$ that has any factorization lengths you desire and you can even prescribe the number of factorizations of each length. The polynomials constructed in this way have high degree. We give a graded analysis, determining all the possible elasticities and catenary degrees for a polynomial as a function of the degree of the polynomial.

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