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On the elasticity of a numerical semigroup

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Abstract. Let S be a numerical semigroup, and $\mathrm{msg}(S)$ its minimal system of generators. Then $\mathrm{m}(S) = \min(\mathrm{msg}(S))$, $\mathrm{M}(S) = \max(\mathrm{msg}(S))$, $\mathrm{e}(S)$, which is the cardinality of $\mathrm{msg}(S)$, and $\mathscr{S}(S) = \frac{\mathrm{M}(S)}{\mathrm{m}(S)}$, are called the multiplicity, comultiplicity, embedding dimension, and elasticity of S, respectively.

Let m and M be positive integers, and let q be a rational number greater than 1. In this paper, we will study the following sets:

- $\{S \mid S \text{ is a numerical semigroup}, \mathrm{m}(S) = m \text{ and } \mathrm{M}(S) = M\}$,
- $\{S \mid S \text{ is a numerical semigroup}, \mathrm{m}(S) = m \text{ and } \mathscr{S}(S) \leq q\}$, and
- $\{S \mid S \text{ is a numerical semigroup}, \mathrm{e}(S) = 3 \text{ and } \mathscr{S}(S) = q\}$.

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