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Wolfgang A Schmid* (schmid@math.univ-paris13.fr), LAGA and Department of Mathematics, Université Paris 8, 2, rue de la Liberté, 93526 Saint-Denis, France. *A characterization of Krull monoids for which sets of lengths are arithmetical progressions.*

Let H denote a monoid, that is, a commutative, cancelative semi-group with neutral element. One says that H is atomic if each non-invertible element is the product of finitely many irreducible elements.

For $a \in H$ with $a = u_1 \dots u_k$ where u_i is irreducible one calls k a length of a and one denotes by $\mathbf{L}(a)$ the set of all k that are a length of a .

Moreover, $\mathcal{L}(H) = \{\mathbf{L}(a) : a \in H\}$ is called the system of sets of lengths of H .

The investigations of sets of lengths, and the system of sets of lengths, are central problems of factorization theory.

It is well-known that for Krull monoids with finite class group where each class contains a prime divisor the system of sets of lengths contains only almost arithmetical multiprogressions with bounds on the parameters that only depend on H .

We present a characterization of those monoids where the system of sets of lengths contains only arithmetical progressions. In particular, we show that these are exactly those for which the system of sets of lengths is additively closed.

This is joint work with A. Geroldinger. Time permitting related problems will be discussed. (Received January 28, 2019)