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Sets of arithmetical invariants in transfer Krull monoids.

A transfer Krull monoid (domain) is a monoid (domain) allowing a transfer homomorphism to a commutative Krull monoid. Transfer Krull monoids include all commutative Krull domains, classes of noetherian domains, and classes of non-commutative Dedekind domains. One-dimensional local noetherian domains, that are not integrally closed, and rings of integer-valued polynomials over Dedekind domains are not transfer Krull. If H is a monoid and $a = u_1 \dots u_k$ is a factorization into irreducible elements, then k is a factorization length and the set $\mathsf{L}(a) \subset \mathbb{N}$ of all possible factorization lengths is the set of lengths of a. If $k, \ell \in \mathsf{L}(a)$ are two successive lengths, then $\ell - k \in \mathbb{N}$ is said to be a distance. The set $\Delta(H)$ of all distances over all elements $a \in H$ is called the set of distances of H. If $\theta \colon H \to B$ is a transfer homomorphism, then invariants of H coincide with the invariants of the commutative Krull monoid B. If H is a commutative Krull monoid with finite class group and prime divisors in all classes, then the set of distances and more are intervals. Without the assumption on the distribution of prime divisors and in non-transfer Krull monoids these sets may be arbitrary. (Received January 19, 2019)