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On the arithmetical advantages of stability.

Let D be an integral domain with quotient field K and I an ideal of D. Let $\mathcal{R}(I) = \{x \in K \mid xI \subseteq I\}$ be the ring of multipliers of I. Then I is said to be stable if I is invertible in $\mathcal{R}(I)$ and D is called stable if every nonzero ideal of D is stable. For $X \subseteq K$ set $X^{-1} = \{x \in K \mid xX \subseteq D\}$ and $X_v = (X^{-1})^{-1}$. The ideal I is called divisorial if $I_v = I$ and D is said to be divisorial if every nonzero ideal of D is divisorial. We say that D is an order in a Dedekind domain if D is a noetherian, one-dimensional domain with nonzero conductor in its integral closure. Every stable order in a Dedekind domain is divisorial and every order in a quadratic number field is a stable order in a Dedekind domain.

Let D be a stable order in a Dedekind domain. The main purpose of our paper is to elaborate the advantages of stability in orders of Dedekind domains. Among other things, we show that the monoid of invertible ideals of D is half-factorial if and only if the monoid of nonzero ideals of D is half-factorial. We also give an example of a divisorial order in a Dedekind domain whose monoid of invertible ideals is half-factorial, but whose monoid of nonzero ideals fails to be half-factorial. (Received August 18, 2020)