962-20-781 **Scott T. Chapman**, Trinity University, 715 Stadium Drive, San Antonio, TX 78212-7200, **Ulrich Krause** (krause@math.uni-bremen.de), Bremen, Germany, and **Eberhard Oeljeklaus*** (oel@math.uni-bremen.de), University of Bremen, Department of Mathematics, D-28334 Bremen, Germany. *On Diophantine Monoids and Their Class Groups.*

In the following context a monoid S is understood to be a finitely generated subgroup of an (additively written) abelian group G with $S \cap \{n \cdot y | n \in \mathbf{N}, y \in G \setminus S\} = \{0\} = S \cap (-S)$, where $\mathbf{N}$ denotes the set of non-negative integers. It is known that S is a Krull monoid with finitely many essential states. Analyzing these states we prove in a rather straightforward way that S has a representation as a Diophantine monoid of size (m, n), i.e. there is a matrix $A \in \mathbf{Z}^{m \times n}$ such that S is isomorphic to the monoid $M_A := \mathbf{N}^n \cap \{x \in \mathbf{Z}^n | Ax = 0\}$. There are always Diophantine representations of S of minimal size $(\tilde{m}, \tilde{n})$ in the sense that $\tilde{m}$ and $\tilde{n}$ are both minimal. We show that $\tilde{m}$ equals the rank of the divisor class group $Cl(S)$ of S and that $\tilde{n}$ is the sum of the number of essential states of S with the rank of the torsion group of $Cl(S)$. (Received September 26, 2000)