A Variant of Nim Played on Boolean Matrices

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We consider a version of matrix Nim played on a Boolean matrix. Each player, in turn, removes a non-zero row or column. The last player to remove a row or column wins. We investigate the Boolean matrices that represent the Ferrers diagram of an integer partition. An integer partition in which each summand is greater then the number of terms in the partition is said to be strong. The Grundy numbers of these Boolean matrices consisting of three or fewer rows are determined. This allows us to classify the $\mathcal{P}$-positions and $\mathcal{N}$-positions of Boolean matrices that represent the Ferrers diagram of any strong integer partition.

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