

1077-20-1108

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We study the class of abelian groups with partial decomposition bases in $L_{\infty\omega}^\delta$ where δ is an ordinal. This class contains the class of Warfield groups which are abelian groups G with a decomposition basis X such that $G/\langle X \rangle$ is simply presented. In this paper, we give a classification theorem in $L_{\infty\omega}^\delta$ in terms of numerical invariants derived from the classical Ulm and Warfield invariants. (Received September 16, 2011)