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p-primary component

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Owner	alozano (2414)
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Author	alozano (2414)
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**Definition 1.** *Let  $G$  be a finite abelian group and let  $p \in \mathbb{N}$  be a prime. The  $p$ -primary component of  $G$ ,  $\Pi_p$ , is the subgroup of all elements whose order is a power of  $p$ .*

Note: The  $p$ -primary component of an abelian group  $G$  coincides with the unique Sylow  $p$ -subgroup of  $G$ .