

ZONAL LABELS GENERALIZED TO ABELIAN GROUPS

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We consider planar maps with a given abelian group where the vertices are labelled with nonzero elements from the group in such a way that the labels on each region sum to zero. Much interesting work is being done with this concept where the group in question is Z_3 (It is related to the Four Color Theorem). We expand on current ideas and show that some are true, more broadly, in abelian groups in general.