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A New View of Intra-Regular $\mathcal{AG}$-Groupoids in Terms of Generalized Cubic Ideals

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Abstract

In this paper we characterize the intra-regular $\mathcal{AG}$-groupoids in terms of generalized cubic set. We show that the concept of $(\in_\Gamma, \in_\Gamma \vee \boldsymbol{q\Delta})$-cubic ideals and of $(\in_\Gamma, \in_\Gamma \vee \boldsymbol{q\Delta})$-cubic interior ideals in an intra-regular $\mathcal{AG}$-groupoid S with left identity coincides. We additionally demonstrate that an $\mathcal{AG}$-groupoid S with left identity is intra-regular if and only if $\beta_1 \wedge^* \beta_2 = \beta_1 \circ^* \beta_2$ for all $(\in_\Gamma, \in_\Gamma \vee \boldsymbol{q\Delta})$-cubic quasi ideals $\beta_1 = \left\langle \widetilde{\Im}_{\beta_1}, \hbar_{\beta_1} \right\rangle$ and $\beta_2 = \left\langle \widetilde{\Im}_{\beta_2}, \hbar_{\beta_2} \right\rangle$ of S.

Keywords: $\mathcal{AG}$-groupoids; intra-regular $\mathcal{AG}$-groupoids; cubic sets, generalized sub $\mathcal{AG}$- groupoids; generalized cubic ideals.