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Symmetric continuous Reinhardt domains. (English)

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A continuous Reinhardt domain over a locally compact Hausdorff space Ω is a bounded domain $D \subset \mathcal{C}_0(\Omega)$ such that

$$f \in D,\ |g| \leq |f| \Rightarrow g \in D \quad (f, g \in \mathcal{C}_0(\Omega))$$

($\mathcal{C}_0(\Omega)$ denotes the space of continuous functions on D which vanish at infinity). The authors show that, if the continuous Reinhardt domain D is symmetric, then it can be written as

$$D = \left\{ f \in \mathcal{C}_0(\Omega) \mid \sup_{j \in J} \sum_{\omega \in \Omega_j} m(\omega)|f(\omega)|^2 < 1 \right\},$$

where $(\Omega_j)_{j \in J}$ is a partition of Ω with Ω_j finite, and m is a positive function defined on Ω with $0 < m_0 \leq m(\omega) \leq m_1 < \infty$. In the proof the authors use that, according to a result by Kaup, there is a JB^*-triple structure on $\mathcal{C}_0(\Omega)$ associated with the bounded symmetric domain D. The associated JB^*-triple product is shown to be given by

$$\{f, g, h\}(\omega) = \sum_{\eta \in \Omega_{j(\omega)}} \frac{m(\eta)}{2} \big(f(\eta)\overline{g(\eta)}h(\omega) + h(\eta)\overline{g(\eta)}f(\omega) \big),$$

for $f, g, h \in \mathcal{C}_0(\Omega)$, where $j(\omega) \in J$ denotes the unique index such that $\omega \in \Omega_{j(\omega)}$.

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