Local-global principle for hermitian spaces over semi-global fields

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Let K be a complete discrete valued field with residue field k and F the function field of a curve over K. Let $A \in {}_2Br(F)$ be a central simple algebra with an involution σ of any kind and $F_0 = F^\sigma$. Let h be an hermitian space over (A, σ) and $G = SU(A, \sigma, h)$ if σ is of first kind and $G = U(A, \sigma, h)$ if σ is of second kind. Suppose that $\mathrm{char}(k) \neq 2$ and $\mathrm{ind}(A) \leq 4$. Then we prove that projective homogeneous spaces under G over F_0 satisfy a local-global principle for rational points with respect to discrete valuations of F. The proof implements patching techniques of Harbater, Hartmann and Krashen. As an application, we obtain a Springer-type theorem for isotropy of hermitian spaces over odd degree extensions of function fields of p-adic curves.