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Derek Habermas* (habermds@potdam.edu), Department of Mathematics, SUNY Potsdam, 44 Pierrepont Ave, Potsdam, 13676. *Compact symmetric spaces, triangular factorization, and Cayley coordinates.*

Let X be a simply connected, compact, Riemannian symmetric space and let U be the universal covering group of the identity component of the isometry group of X . Let $\mathfrak{g} = \mathfrak{n}^+ \oplus \mathfrak{h} \oplus \mathfrak{n}^-$ be a \mathfrak{u} compatible triangular factorization of the complexification of the Lie algebra of U , $\mathfrak{g} = \mathfrak{u}^{\mathbb{C}}$. We can represent X as the homogeneous space U/K , where K is the fixed point set of an involution Θ which stabilizes the triangular factorization of \mathfrak{g} . We examine the intersection of the Cartan embedding, $\phi : U/K \hookrightarrow U \subset G : uK \mapsto uu^{-\Theta}$, with the Birkhoff decomposition of G , $\coprod_{w \in W} \Sigma_w^G$, where $\Sigma_w^G = N^+ \mathbf{w} H N^-$. For generic elements, $g \in \phi(U/K) \cap \Sigma_1^G$, we have a unique factorization $g = ldu$. In classical cases where Θ is an inner automorphism, we present explicit formulas for the diagonal term d in Cayley coordinates, and we use them to compute $\pi_0(\phi(U/K) \cap \Sigma_1^G)$ for all such cases. Connections to Poisson structures on U/K will be mentioned. (Received September 19, 2007)