1051-43-68 **Gestur Olafsson*** (olafsson@math.lsu.edu), Department of Mathematics, Louisiana State University, Baton Rouge, LA 70803, and **J Wolf**. *Invariants and application to harmonic analysis.*

Assume that $G_1 \subset G_2$ are semisimple Lie groups and $\mathfrak{h}_1 \subset \mathfrak{h}_2$ are Cartan subalgebras of $\mathfrak{g}_1$ respectively $\mathfrak{g}_2$. Furthermore, assume that $\theta_2 : G_2 \to G_2$ is a Cartan involution leaving G_1 invariant. Then $\theta_1 := \theta_2|_{G_1}$ is a Cartan involution on G_1 and we have an inclusion $G_1/K_1 \subseteq G_2/K_2$. Let

$$\mathfrak{g}_1 = \mathfrak{k}_1 \oplus \mathfrak{s}_1 \subset \mathfrak{k}_2 \oplus \mathfrak{s}_2 = \mathfrak{g}_2$$

be the corresponding Cartan decomposition. Let $\mathfrak{a}_1 \subset \mathfrak{a}_2$ be maximal abelian in $\mathfrak{s}_1$ respectively $\mathfrak{s}_2$. We let W_j be the Weyl group in $\mathfrak{h}_j$ and $\mathcal{W}_j$ be the Weyl group in $\mathfrak{a}_j$. Then it is well known that $\mathcal{W}_j = \{w|_{\mathfrak{a}_j} \mid w \in W_j,\ w(\mathfrak{a}_j) = \mathfrak{a}_j\}$. We give sufficient condition such that

$$S(\mathfrak{h}_2)^{W_2}|_{\mathfrak{h}_1} = S(\mathfrak{h}_1)^{W_1} \quad \text{and} \quad S(\mathfrak{a}_2)^{\mathcal{W}_2}|_{\mathfrak{a}_1} = S(\mathfrak{a}_1)^{\mathcal{W}_1} .$$

We apply this to harmonic analysis on symmetric spaces and inductive limits of symmetric spaces. (Received August 12, 2009)