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**Spaces of Bounded Spherical Functions for Irreducible Nilpotent  
Gelfand Pairs: Part II**

In prior work an orbit method, due to Pukanszky and Lipsman, was used to produce an injective mapping  $\Psi: \Delta(K, N) \rightarrow \mathfrak{n}^*/K$  from the space of bounded  $K$ -spherical functions for a nilpotent Gelfand pair  $(K, N)$  into the space of  $K$ -orbits in the dual for the Lie algebra  $\mathfrak{n}$  of  $N$ . We have conjectured that  $\Psi$  is a topological embedding. In this paper we complete the proof of this conjecture under the hypothesis that  $(K, N)$  is an *irreducible* nilpotent Gelfand pair. Following Part I of this work it remains to verify the conjecture in six exceptional cases from Vinberg's classification of irreducible nilpotent Gelfand pairs.

**Keywords:** Gelfand pairs, spherical functions, nilpotent Lie groups, orbit method.

**MSC:** 22E30, 43A90.