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DISTAL COMPACTIFICATIONS OF GROUP EXTENSIONS

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ABSTRACT. Let N and K be topological groups, and let G be a topological group extension of N by K. We show that if N or K is compact then, under suitable conditions, the distal compactification of G is a canonical extension of a group compactification of N by the distal compactification of K. An analogous result is shown to hold for the universal point distal G-flow.

1. Introduction. Let N and K be groups with identity e. A group G_0 is an extension of N by K if there exists a short exact sequence

$$e \longrightarrow N \longrightarrow G_0 \longrightarrow K \longrightarrow e.$$

A result of Schreier [**12**] asserts that G_0 is canonically isomorphic to $G := N \times K$ with multiplication in G given by

$$(1) \qquad (s,t)(s',t') = (st(s')[t,t'], tt'), \quad s, s' \in N, t, t' \in K,$$

where the mappings $(t,t') \mapsto [t,t'] : K \times K \to N$ and $t \mapsto t(\cdot) : K \to \operatorname{Aut}(N)$ satisfy the Schreier extension formulation conditions

$$(\text{SEF}) \qquad \begin{cases} e(s) = s \quad \text{and} \quad [t,e] = [e,t] = e, \\ [t,t'](tt')(s) = t(t'(s))[t,t'], \quad \text{and} \\ [t,t'][tt',t''] = t([t',t'']),[t,t't''], \end{cases}$$

see [**13**]. To indicate this we shall write $G = N \times K$ (SEF).

Now suppose that N and K are topological groups and that the Schreier mappings $[\cdot,\cdot] : K \times K \to N$ and $(s,t) \mapsto t(s) : N \times K \to N$

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