Minimality of the Semidirect Product

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A topological group is minimal if it does not admit a strictly coarser Hausdorff group topology. We prove that for a compact topological group G, the semidirect product $G \rtimes P$ is minimal for every closed subgroup P of Aut(G). In general, the compactness of G is essential; $G \rtimes P$ might be nonminimal even for precompact minimal groups G as it follows from an example of Eberhardt–Dierolf–Schwanengel. Some of the results were inspired by a work of Gamarnik.

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