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We'am M. Jasim* (s_weam@yahoo.com), Texas A & M International University, Department of Engineering, Mathematics, and, Physics LBV 312 5201 University Blvd, Laredo, TX 78041, and **robert r. kallman** (kallman@unt.edu), University of North Texas, Department of, Mathematics GAB 435, 1155 Union Circle #311430, Denton, TX 76203-5017. *Algebraically Determined Semidirect Products.*

Let G be a Polish (i.e., complete separable metric topological) group. Define G to be an algebraically determined Polish group if given any Polish group L and an algebraic isomorphism $\varphi : L \to G$, then φ is a topological isomorphism. The purpose of this paper is to prove a general theorem that gives useful sufficient conditions for a semidirect product of two Polish groups to be algebraically determined. This general theorem will provide a flowchart or recipe for proving that some special semidirect products are algebraically determined. For example, it may be used to prove that the natural semidirect product of H and G, where H is the additive group of a separable Hilbert space and G is a Polish group of unitaries on H acting transitively on the unit sphere with $-I \in G$, is algebraically determined. An example of such a G is the unitary group of a separable irreducible C^*-algebra with identity on H. Not all nontrivial semidirect products of Polish groups are algebraically determined, for it is known that the Heisenberg group is not an algebraically determined Polish group. (Received June 26, 2012)