

# On the existence of isovariant extensors for actions of locally compact groups

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The notion of an isovariant absolute extensor coincides, in fact, with the concept of the universal  $G$ -space in the sense of R.S. Palais used for the classification of  $G$ -spaces. The existence of isovariant absolute extensors proved by Palais for a relatively restricted class of  $G$ -spaces (in particular, the  $G$ -spaces of this class are finite-dimensional of finite orbit type and the group  $G$  is assumed to be a compact Lie group) is not a trivial fact.

For a given locally compact group  $G$ , we consider the class  $G\text{-}\mathcal{PM}$  of metrizable proper  $G$ -spaces with metrizable orbit spaces. Our main result is the following:

**Theorem.** *For every locally compact group  $G$  there exists a  $G\text{-}\mathcal{PM}$ -space which is an isovariant absolute extensor for the class  $G\text{-}\mathcal{PM}$ .*

As an immediate application of the main result we obtain the following corollary:

**Theorem.** *For every locally compact metrizable group  $G$  there exists a proper free action of the group  $G$  on the Hilbert space which makes it into an equivariant absolute extensor for free  $G\text{-}\mathcal{PM}$ -spaces.*