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A proper and isometric action of a Lie group is called *polar* if it admits sections: these are complete submanifolds that meet all the orbits and always perpendicularly. In the case of linear actions on Euclidean spaces, a theorem by Dadok implies that the polar actions essentially coincide with the isotropy representations of the symmetric spaces.

In infinite dimensions, Terng has constructed interesting examples of polar actions, the so called $P(G, H)$ -actions, which are also associated to symmetric spaces of affine Kac-Moody type. In this talk, we will explain the conjecture that the $P(G, H)$ -actions exhaust all examples of polar actions on Hilbert spaces, and present some partial results in this direction. (Joint work with E. Heintze and K. Weigl.) (Received December 14, 2007)