

Pontryagin classes and representations.

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Abstract: I will elaborate on a Theorem by Bott stating that if M is a smooth manifold and F is an involutive subbundle of TM of codimension q , then the k -th Pontryagin classes of the conormal bundle of F have to vanish for $k > 2q$.

In fact, this theorem can be immediately generalised to a theorem on the Pontryagin classes of a reducible vector bundle, i.e. a vector bundle E over M with a flat F connection on E for F an involutive subbundle of TM . In particular, if none of the Pontryagin classes of a given vector bundle vanish, then it has no quotient to a vector bundle of the same rank over a manifold of dimension smaller than $\dim M/2$.

I will give the proof of this theorem in the general context of Lie algebroid representations. Finally, as an application, I will explain how this gives obstructions to the existence of ideals in Lie algebroids..