11. H. Matsumura, *Commutative algebra*, Benjamin, New York, 1970. MR 42 #1813.

12. S. McAdam, *Going down and open extensions*, Canad. J. Math. (to appear).

13. I. J. Papick, Ph. D. Dissertation, Rutgers University, New Brunswick, N. J., 1975.

14. M. Raynaud, *Anneaux locaux henséliens*, Lecture Notes in Math., vol. 169, Springer-Verlag, Berlin and New York, 1970. MR 43 #3252.

15. F. Richman, *Generalized quotient rings*, Proc. Amer. Math. Soc. 16 (1965), 794–799. MR 31 #5880.

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G-TRANSVERSALITY

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Let G be a compact Lie group and N, M and $Y \subset M$ be smooth G manifolds. Suppose $f: N \longrightarrow M$ is a proper G map. We give an obstruction theory (Theorem 1) for a proper G homotopy between f and a map g transverse to Y written $f \pitchfork Y$. In this generality we cannot say more; however, when $f: N \longrightarrow M$ is a quasi-equivalence of G vector bundles over Y, this can be considerably improved (Theorem 2) by removing the dependence of the map f. By definition f is a quasi-equivalence if N and M are G vector bundles over Y and f is proper, fiber preserving and degree 1 on fibers. *To be concise we suppose G is abelian* and omit applications and insights, referring to [1] and [2] for further information.

Let K be a subgroup of G and $\hat{K}$ the set of real irreducible K modules. If Γ and Ω are real K modules, let $V_{\Gamma,\Omega}$ denote the space of surjective real K homomorphisms of Γ to Ω. By Schur's lemma $V_{\Gamma,\Omega} = \Pi_{\psi \in \hat{K}} V^{\psi}_{\Gamma,\Omega}$ where $V^{\psi}_{\Gamma,\Omega}$ has the homotopy type of the Stiefel manifold of b_ψ frames in the D_ψ vector space of dimension a_ψ. Here D_ψ is the division algebra of real K endomorphisms of ψ and $\Gamma = \Sigma_{\psi \in \hat{K}} a_\psi \psi$, $\Omega = \Sigma_{\psi \in \hat{K}} b_\psi \psi$.

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