1176-55-291 **Matthias Franz*** (`mfranz@uwo.ca`). *The Chang-Skjelbred lemma.*

Let $T \cong (S^1)^r$ be a torus and X a sufficiently nice T-space, for example a compact T-manifold or a complex algebraic variety with an action of the complexification $(\mathbb{C}^\times)^r$ of T. Assume that the equivariant cohomology $H_T^*(X)$ of X with real coefficients is free over the polynomial ring $H^*(BT)$. The Chang-Skjelbred lemma asserts that the Chang-Skjelbred sequence

$$0 \longrightarrow H_T^*(X) \longrightarrow H_T^*(X^T) \longrightarrow H_T^{*+1}(X_1, X^T)$$

is exact in this case, where X^T denotes the T-fixed points and X_1 the orbits of dimension at most 1. This allows to compute $H_T^*(X)$, including the ring structure, from X^T and X_1 alone. In the case where the equivariant 1-skeleton X_1 consists of finitely many 2-spheres, glued together at their poles, this approach has been popularized by Goresky–Kottwitz–MacPherson and is therefore often called the GKM method.

In this expository talk I will discuss these powerful results together with several examples. I will also survey various extensions: to other groups, to other coefficients and to spaces with non-free equivariant cohomology. (Received January 25, 2022)