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Complex Reflections and Polynomial Generators of Homotopy Groups

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Abstract. Starting from suitable maps of the form $\psi:\mathbb{S}^n \to \mathrm{SU}(m)$, for large m, we obtain functions $\theta:\mathbb{S}^n \longrightarrow \mathrm{SU}(k)$ that generate $\pi_n\,\mathrm{SU}(k)$, for certain n and k. We have used this method in elementary algebraic topology courses for purposes of illustration, since it requires no machinery beyond the homotopy exact sequence of fibrations and provides an insight about the Bott periodicity theorems.

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