1100-16-218 **Frauke M. Bleher***, Department of Mathematics, University of Iowa, 14 MacLean Hall, Iowa City, IA 52242, and **Ted Chinburg**, Department of Mathematics, University of Pennsylvania, Philadelphia, PA 19104-6395. *Linear operators and orbit closures.* Preliminary report.

This talk is about joint work with Ted Chinburg. We study the Grassmannian $\mathcal{G}$ of submodules C of a given dimension inside a finitely generated projective module P for a finite dimensional algebra Λ over an algebraically closed field k. The closure $\mathcal{X}$ in $\mathcal{G}$ of the orbit of such a submodule C under the action of $\mathrm{Aut}_\Lambda(P)$ has been considered by a number of authors. We concentrate on the case when P is indecomposable. In this case $\mathcal{X}$ is a rational variety, and there is an affine n-space $\mathbb{A}^n$ in $\mathcal{X}$ with the following property. The embedding of $\mathbb{A}^n$ into $\mathcal{G}$ is given by taking the space spanned by the rows of a matrix of linear polynomials in the n standard coordinates for $\mathbb{A}^n$. For $n = 2$, we show that the generic embedding of $\mathbb{A}^2$ into $\mathcal{G}$ via such a matrix has closure isomorphic to $\mathbb{P}^2$. We also show that there is a positive dimensional family of embeddings for which the closure is the Hirzebruch surface X_2, respectively X_3. While it is known by work of the authors and Birge Huisgen-Zimmermann that X_2 arises from an orbit closure $\mathcal{X}$ as above, this is not known for the surface X_3. (Received February 08, 2014)