

Initial degenerations of Grassmannians

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Let $\text{Gr}_0^{d,n}$ denote the open subvariety of the Grassmannian $\text{Gr}^{d,n}$ consisting of $d - 1$ dimensional subspaces of \mathbb{P}^{n-1} meeting the toric boundary transversely. We prove that $\text{Gr}_0^{3,7}$ is schön in the sense that all of its initial degenerations are smooth. We use this to show that the Chow quotient of $\text{Gr}^{3,7}$ by the maximal torus $H \subset \text{GL}(7)$ is the log canonical compactification of the moduli space of 7 lines in \mathbb{P}^2 in linear general position. This provides a positive answer to a conjecture of Hacking, Keel, and Tevelev from *Geometry of Chow quotients of Grassmannians*.