QUADRATICALLY PARAMETRIZED SURFACES

J. WILLIAM HOFFMAN AND HAOHAO WANG

ABSTRACT. Let f_0, f_1, f_2, f_3 be linearly independent homogeneous quadratic forms in the standard $\mathbb{Z}$-graded ring $R := \mathbb{K}[s, t, u]$, and $\gcd(f_0, f_1, f_2, f_3) = 1$. This defines a rational map $\phi : \mathbb{P}^2 \rightarrow \mathbb{P}^3$. The Rees algebra $\mathrm{Rees}(I) = R \oplus I \oplus I^2 \oplus \cdots$ of the ideal $I = \langle f_0, f_1, f_2, f_3 \rangle$ is the graded R-algebra which can be described as the image of an R-algebra homomorphism $h \colon R[x, y, z, w] \rightarrow \mathrm{Rees}(I)$. This presentation discusses the graded free resolutions of I, and the structure of the $\ker(h)$.

Department of Mathematics, Louisiana State University, Baton Rouge, Louisiana 70803, USA
E-mail address: `hoffman@math.lsu.edu`

Department of Mathematics, Southeast Missouri State University, Cape Girardeau, MO 63701, USA
E-mail address: `hwang@semo.edu`