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Title: Tensor Product surfaces and linear syzygies.

A tensor product surface is the image of a rational map $\varphi : \mathbb{P}^1 \times \mathbb{P}^1 \dashrightarrow \mathbb{P}^3$. Such surfaces arise in geometric modeling and in this context it is useful to know the implicit equation of the closure of the image. In the first part of this talk I will explain how the syzygies of the defining polynomials of φ determine its implicit equation. For the second part and I will present recent progress on improving syzygy based algorithms to solve the implicitization problem for tensor product surfaces. (Received September 22, 2015)