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**Jesse Kass** and **Frank Thorne\*** ([thorne@math.sc.edu](mailto:thorne@math.sc.edu)). *What is the height of two points in the plane?* Preliminary report.

The Hilbert scheme  $\text{Hilb}^2(\mathbb{P}^2)$  is the parameter space counting pairs of points in the projective plane. Its rational points are in bijection with pairs of rational points in  $\mathbb{P}^2$ , provided you count the ‘schemey points’ too. For example, a Galois-conjugate pair of points, defined over a quadratic field, counts.

We define height functions corresponding to a large portion of the ample cone, and verify Manin’s conjecture in these cases. I will explain how the algebraic geometry leaves us with a geometry of numbers question, and then how we addressed the geometry of numbers question.

I will also discuss, in a much more speculative manner, how we hope to connect questions like this to number field counting questions. (Received September 24, 2018)