

1018-13-216

**David Eisenbud\*** ([de@msri.org](mailto:de@msri.org)), 1336 Summit Rd, Berkeley, CA 94708. *The Regularity of Powers of an Ideal*. Preliminary report.

Let  $I$  be a homogeneous ideal in a polynomial ring over a field. By a theorem of Cutkosky-Herzog-Trung and Kodiyalam, the Castelnuovo-Mumford regularity of the  $n$ -th power of  $I$  grows linearly with  $n$  when  $n$  is large. The leading term is known; the place where linearity begins, and the constant term, are mysterious. I will show how to identify these numbers in a very special case, and present a conjecture dealing with a slightly less special case. This is a very preliminary report on joint work with Craig Huneke. (Received March 07, 2006)