1119-14-242   **Ravi Vakil*** (`vakil@math.stanford.edu`), Dept. of Mathematics, Stanford University, Stanford, CA 94305, and **Melanie Matchett Wood**. *Cutting and pasting in (algebraic) geometry.*

Given some class of "geometric spaces", we can make a ring as follows.

(i) *(additive structure)* When U is an open subset of such a space X, $[X] = [U] + [(X \setminus U)]$;

(ii) *(multiplicative structure)* $[X \times Y] = [X][Y]$.

In the algebraic setting, this ring (the "Grothendieck ring of varieties") contains surprising "stabilization" structure, connecting geometry to arithmetic and topology. I will discuss some remarkable statements about this ring (both known and conjectural), and present new statements (again, both known and conjectural). A motivating example will be polynomials in one variable. (This talk is intended for a broad audience.) This is joint work with Melanie Matchett Wood. (Received February 16, 2016)

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