1014-13-1013 **Sarah Glaz*** (`glaz@uconnvm.uconn.edu`), Department of Mathematics, University of Connecticut, Storrs, CT 06269. *Gaussian Properties of Total Rings of Quotients.* Preliminary report.

Let R be a commutative ring, and let $f \epsilon R[x]$ be a polynomial. The content of f, $c(f)$, is the ideal of R generated by the coefficients of f. A polynomial is called Gaussian if $c(fg) = c(f)c(g)$ for any polynomial $g \epsilon R[x]$. A ring is called Gaussian if every polynomial over R is Gaussian. Gaussian polynomials and rings had been a subject of investigation since their definition by Tsang in 1965. In 1967 Robert Gilmer showed that an integral domain R is Prufer iff it is Gaussian. Prompted by this result I considered several Gaussian properties for rings with zero divisors, and the extent to which these properties coincide if the ring is not a domain. These properties and their general relation to each other can be summarized as follows: Semihereditary ring$\longrightarrow$w.gl.dim $R \leq 1 \longrightarrow$ Arithmetical ring$\longrightarrow$Gaussian ring$\longrightarrow$Prufer ring. None of the arrows are reversible in general. This talk revolves around recent joint work with Silvana Bazzoni regarding the impact of the Gaussian and related properties on the total ring of quotients of a ring. In particular, we derived conditions on the total ring of quotients that allow for reversing the arrows in all the above implications. (Received September 26, 2005)