Meeting: 1004, Bowling Green, Kentucky, SS 11A, Special Session on Commutative Ring Theory

1004-13-72 **Andrea M. Frazier*** (frazier@math.uiowa.edu), Department of Mathematics, University of Iowa, 14 MacLean Hall, Iowa City, IA 52242, and **D. D. Anderson**. *A general theory of factorization, I.* Preliminary report.

Let D be an integral domain with unit group $U(D)$ and $D^\sharp = D\backslash(U(D) \cup \{0\})$; let τ be a relation on $D^\sharp$. For $a \in D^\sharp$, we define a factorization $a = \lambda a_1 \cdots a_n$ to be a τ *-factorization of* a if $\lambda \in U(D)$, $a_i \in D^\sharp$, and $a_i \tau a_j$ for $i \neq j$. Then $a \in D^\sharp$ is a τ-atom if $a = \lambda(\lambda^{-1}a)$ is the only τ-factorization of a, and we define D to be τ*-atomic* if each element has a τ-factorization into τ-atoms. Analogously, we will define properties such as τ-prime, $|_\tau$-prime (read 'divides-τ prime'), τ-ACCP, τ-UFD, etc. We discuss these definitions, some examples, and elementary theorems. (Received January 17, 2005)