

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

1004-13-73 **D. D. Anderson*** (ddanders@math.uiowa.edu), University of Iowa, Department of Mathematics, 14 MacLean Hall, Iowa City, IA 52242, and **Andrea M. Frazier**. *A general theory of factorization, II*. Preliminary report.

We look at two examples of τ -factorizations as defined in the abstract *A general theory of factorization, I*.

Example 1. Let D be an integral domain with quotient field K and define ∂ on $D[X]$ by $f\partial g$ if $\deg(f) = \deg(g)$. Then the following are equivalent: (1) $D[X]$ is ∂ -atomic; (2) every polynomial of degree ≥ 1 splits into linear factors; (3) D is Schreier with K algebraically closed (Note: the connections between (1) and (3) are discussed in a preprint by D. D. Anderson and M. Zafrullah). Further, $D[X]$ is a ∂ -UFD $\Leftrightarrow D = K$ is algebraically closed.

Example 2. Let D be an integral domain and \star a star-operation on D . For $a, b \in D^\#$, define $a\tau b$ if $(a, b)^\star = D$. We investigate this example of τ -factorizations in more detail. (Received January 17, 2005)