1035-O1-1765 **R. Peter DeLong*** (R_Peter_DeLong@MathC2.com), 1196 3rd Ave S, Anoka, MN 553032775. *Set Partitions of a Union.* Preliminary report.

This paper addresses the problem of enumerating the partitions of a set which is itself a union of other sets, and where rules exist that limit the ways in which set elements can be partitioned into subsets. One such rule is that elements from the same set prior to the union must be in different subsets in every partition of the union. Other rules govern the aggregation of sets of subsets into larger subsets within the partition. The rules we consider can, in general, be represented as a directed tree that specifies an internal structure for the acceptable set partitions of the union.

This problem originates in the engineering field known as sensor fusion, where partitioning of sets of sensor reports into subsets representing distinct real objects is an NP-complete problem that is usually solved by a sequence of processors arranged in a tree structure. Enumeration of the set partitions is useful to the development of sensor fusion performance metrics, and aids in general understanding of the sensor fusion problem. (Received September 20, 2007)