Meeting: 1004, Bowling Green, Kentucky, SS 8A, Special Session on Topology, Convergence, and Order, in Honor of Darrell Kent

1004-54-23 **Darrell C. Kent*** (dkent@wsu.edu), Department of Mathematics, Washington State University, Pullman, WA 99164-3113, and **Won Keun Min** (wkmin@cc.kangwon.ac.kr), Department of Mathematics, Kangwon National University, 200-701 Chuncheon, South Korea. *Neighborhood Spaces.*

We define an interior operator I on X to be a set function: I: $2^X \to 2^X$ which satisfies: (i) $I(X) = X$; (ii) $I(A) \subseteq A$; (iii) $A \subseteq B \Rightarrow I(A) \subseteq I(B)$. To obtain a topological interior, one needs the additional axioms: (iv) $I(A \cap B) = I(A) \cap I(B)$; (v) $I(A) = I(I(A))$. Neighborhood spaces are characterized by interior operators, pretopological spaces by interior operators which satisfy (iv), and supratopological (or closure) spaces by interior operators which satisfy (v).

Neighborhood spaces are introduced in terms of certain neighborhood axioms, and the associated interior and closure operators are defined in the obvious way. A convergence theory for neighborhood spaces is developed in terms of "p-stacks", which are generalizations of filters. We discuss continuity, regularity, initial structures, final structures, and compactness, including the Tychonov Theorem. Also, included is a discussion of topological, pretopological, and closure spaces as subcategories of the category of neighborhood spaces. (Received January 25, 2005)