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Richard E. Hodel* (hodel@math.duke.edu), Duke University, Mathematics Department, Box 90320, Durham, NC 27708. *A theory of convergence and cluster points based on κ -nets.*

We develop a theory of convergence and cluster points based on a special type of net called a κ -net. This is done in the context of an operator Φ that allows us to simultaneously treat convergence and cluster points properties of compact spaces, H-closed spaces, and δ -compact spaces. We give applications to (1) preservation of compactness-like properties in product spaces and (2) cardinal function inequalities. We also show that the κ -Frechet and κ -net spaces of Meyer can be characterized in terms of κ -nets and give cryptomorphic descriptions of these two classes of spaces in terms of κ -convergence structures. (Received August 29, 2008)