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Van C. Nall* (vnall@richmond.edu), 23 Westhampton Way, University of Richmond, Richmond, VA 23173, and **Judy Kennedy**. *Dynamical properties of shift maps on inverse limits with a set valued function.*

The dynamics of a single valued function on a compact space are closely linked to the dynamics of the shift map on the inverse limit with the function as the sole bonding map. It has been shown that the bonding function is chaotic if and only if the shift map is chaotic. One reason for caring about this connection is that the shift map is a homeomorphism on the inverse limit, and therefore the topological structure of the inverse limit space must reflect in its richness the dynamics of the shift map. In the set valued case there may not be a natural definition for chaos since there is not a single well defined orbit for each point. However, the shift map is a continuous single valued function so it together with the inverse limit space form a dynamical system which can be chaotic in any of the usual senses. For the set valued case we demonstrate with theorems and examples rich topological structure in the inverse limit when the shift map is chaotic and connect that chaos to a property of the set valued function that is a natural generalization of an important chaos producing property of continuous functions. (Received January 15, 2016)