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Hailong Dao, Joseph Doolittle, Ken Duna, Bennet Goeckner, Brent J Holmes*
(brentholmes@ku.edu) and **Justin Lyle**. *Higher Nerves, Depth and the f -vector*.

Let $A = \{A_1, A_2, \dots, A_r\}$ be a family of sets. Then $N(A) := \{F \subseteq [r] : \cap_{i \in F} A_i \neq \emptyset\}$ is the *Nerve Complex* of A . This simplicial complex contains valuable connectivity information and has been studied for many years; however, this complex does not retain any information about the size of the intersections. In this talk, I introduce generalized notions of this nerve complex for the case where A is the set of facets of a simplicial complex. Together, these complexes provide a plethora of connectivity information. I will show that the homologies of these higher nerve complexes determine the depth of the Stanley-Reisner ring $k[\Delta]$ as well as the f -vector and h -vector of Δ . (Received August 09, 2018)