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Greg Bell* (gcbell@uncg.edu), Department of Mathematics and Statistics, 144 Petty Building, 317 College Ave, Greensboro, NC 27412, and **Austin Lawson, Joshua Martin, James Rudzinski** and **Clifford Smyth**. *Multiscale persistence*. Preliminary report.

Let X be a finite point set $X = \{x_1, \dots, x_n\}$ in a metric space and $R = \{r_1, \dots, r_n\}$ be real numbers such that for each i , $r_i \in (0, 1]$. For a real parameter t we consider the Rips complex built from the nerve of the collection $\{B(x_i; t \cdot r_i)\}$. We study the corresponding persistence module on these complexes. We prove a Vietoris-Rips lemma, a stability theorem, and show how this fits into the framework of generalized persistence. (Received September 21, 2015)