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Yu-Min Chung* (ychung@wm.edu), Department of Mathematics, College of William and Mary, P.O. Box 8795, Williamsburg, VA 23185, and **Sarah Day**. *Persistent Homology based thresholding method and applications*.

An automated image thresholding method based on the persistent homology is presented. The primary difference among traditional methods is that the resultant binary image respects underlying topological features. Furthermore, in the presence of noise, the method provides more information to obtain a better estimate of the Betti numbers. Finally, we will show applications to binary alloy data from Material Science, and firn data, a type of ice, from Climatology. (Received September 19, 2015)