1086-53-1892 **Jason Cantarella**, **Tetsuo Deguchi** and **Clayton Shonkwiler*** (clayton@math.uga.edu), Department of Mathematics, University of Georgia, Athens, GA 30602. *Probability Theory of Random Polygons from the Quaternionic Viewpoint.*

I will describe a new measure on closed space and plane polygons which comes from pushing forward Haar measure on certain Stiefel manifolds. The edgelengths of polygons sampled according to this measure obey beta distributions. This makes these polygon measures different from those usually studied, which have Gaussian or fixed edgelengths. One advantage of these measures is that expectations and moments for chordlengths and radii of gyration can be explicitly computed. Another is that direct sampling according to these measures is fast (linear in the number of edges) and easy to code. (Received September 24, 2012)