1063-58-173   **Christine M Guenther*** (`guenther@pacificu.edu`), Department of Mathematics and Computer Scienc, 2043 College Way, Pacific University, Forest Grove, OR 97116. *The second order renormalization group flow for locally homogeneous geometries on closed 3-manifolds.* Preliminary report.

The second order renormalization group flow of quantum field theory is the geometric evolution equation

$$\frac{\partial g}{\partial t} = -2Rc - \alpha Rm^2,$$

where g is a Riemannian metric, Rc is Ricci curvature, Rm is Riemannian curvature, and $0 < \alpha$ is a small parameter.

We investigate the behavior of the flow for locally homogeneous geometries on closed 3-manifolds, noting conditions under which it differs from the Ricci flow. (Received August 15, 2010)