1096-57-826 **Richard A Scott*** (`rscott@scu.edu`). *Nonpositively curved Eulerian cube complexes and reciprocity.*

Let G be the fundamental group of a compact nonpositively curved cube complex Y. With respect to a basepoint x, one obtains an integer-valued length function on G by counting the number of edges in a minimal length edge-path representing each group element. The *growth series of* G *with respect to* x is then defined to be the power series $G_x(t) = \sum_g t^{|g|}$ where $|g|$ denotes the length of g. Using the fact that G admits a suitable automatic structure, $G_x(t)$ can be shown to be a rational function. We prove that if Y is a manifold of dimension n, then this rational function satisfies the reciprocity formula $G_x(t^{-1}) = (-1)^n G_x(t)$. We prove the formula in a more general setting, replacing the group with the fundamental groupoid, replacing the growth series with the characteristic series for a suitable regular language, and only assuming Y is Eulerian. (Received September 10, 2013)