1125-11-1229 **R. Davis**, **R. Pries**, **V. Stojanoska** and **K. Wickelgren*** (kwickelgren3@math.gatech.edu), School of Math, Georgia Institute of Technology, 686 Cherry Street, Atlanta, GA 30308. *Galois action on Fermat curves.*

Consider the Fermat curve $x^p + y^p = 1$ where p is an odd prime. Let $K = \mathbb{Q}(\zeta_p)$ be the cyclotomic field. We extend work of Anderson about the action of the absolute Galois group G_K on a relative homology group of the Fermat curve. Anderson proved that the action factors through $Q = \mathrm{Gal}(L/K)$ where L is the splitting field of $1 - (1 - x^p)^p$. For p satisfying Vandiver's conjecture, we find an explicit formula for the action of $q \in Q$ on the relative homology. This is joint work by R. Davis, R. Pries, V. Stojanoska, and K. Wickelgren. (Received September 15, 2016)