1044-55-114 **Scott M Bailey*** (bailey@math.rochester.edu), University of Rochester, Department of Mathematics, R.C. Box 270138, Rochester, NY 14626. *On the Tate spectrum of tmf at the prime 2.* Preliminary report.

The root invariant of Mahowald associates to every element α in the stable homotopy groups of spheres, another element $R(\alpha)$. Since its construction introduces indeterminacy, the root invariant is a coset in general. Ravenel and Mahowald conjectured that the root invariant of a v_n-periodic element is v_{n+1}-periodic. Furthermore, they continued to exhibit a relationship between elements that were themselves root invariants with their behavior in the EHP spectral sequence. In particular, $R(-)$ seems to provide an interesting connection between the unstable world and the chromatic view of the stable world. Although neither a proof, nor a precise statement, of this phenomena exists there are computations establishing its plausibility. For example, the root invariant is closely related to that of the Tate spectrum, tE, of a spectrum E. Numerous authors have given examples of v_n-periodic cohomology theories (bo, $BP\langle 2\rangle$, Johnson-Wilson theories $E(n)$, etc.) which split into v_n-torsion after the Tate spectrum functor is applied. In this talk, I will define the Tate spectrum functor, and discuss a similar phenomena of $t(tmf)$ at the prime 2. (Received August 26, 2008)