1043-55-185 **Nicholas J. Kuhn***, Mathematics Department, Kerchof Hall, University of Virginia, Charlottesville, VA 22904-4137. *Towards the unstable v_2–periodic homotopy of odd spheres.*

Given a self map of a finite complex $v : \Sigma^d F \to F$, one can form the localized homotopy groups $v^{-1}\pi_*(Z;F)$ of any space Z. Localized at a prime p, there is a functor Φ_n from spaces to spectra such that $v^{-1}\pi_*(Z;F) = [F, \Phi_n(Z)]_*$ for all v_n–self maps v, i.e. maps v inducing a nontrivial isomorphism on the nth Morava K–theory $K(n)_*$. Thus one would like to identify the spectrum $\Phi_n(Z)$ when possible.

When $p = 2$ and m is odd, a theorem of Mahowald can be interpreted as saying that $\Phi_1(S^m) = \Sigma^m \mathbb{R}P^{m-1}_{K(1)}$. We discuss the case when $n = 2$: one gets a cofibration sequence of $T(2)$–local spectra

$$\Phi_2(S^m) \to \Sigma^m \mathbb{R}P^{m-1}_{T(2)} \to \Sigma^m L(2)^{m-1}_{T(2)}.$$

Here $L(2)^{m-1}$ is a certain explicit subquotient of $B(\mathbb{Z}/2)^2$, and $T(2)$ is the telescope of any v_2–self map, conjecturally in the same Bousfield class as $K(2)$. (Received August 26, 2008)