Hood Chatham* (hood@mit.edu). An Orientation Map for Height $p - 1$ Real $E$ theory.

Let $p$ be an odd prime and let $EO = E_{p-1}^{hC_p}$ be the $C_p$ fixed points of height $p - 1$ Morava $E$ theory. We say that an even spectrum $X$ has algebraic $EO$ theory if the splitting of $K_*(X)$ as a $K_*[C_p]$-module lifts to a topological splitting of $EO \wedge X$.

We develop criteria to show that a spectrum has algebraic $EO$ theory, in particular showing that any connective spectrum with mod $p$ homology concentrated in degrees $2k(p - 1)$ has algebraic $EO$-theory. As an application, we answer a question posed by Hovey and Ravenel by producing a unital orientation $MY_{4p-4} \rightarrow EO$ analogous to the $MSU$ orientation of $KO$ at $p = 2$. (Received August 16, 2019)