1172-55-300   **Eva Belmont*** (`ebelmont@ucsd.edu`) and **Katsumi Shimomura**. *β elements detected by the 3-primary image of tmf*.

We show that v_2^9 is a permanent cycle in the 3-primary Adams-Novikov spectral sequence computing $\pi_*(S/(3, v_1^8))$, and use this to construct several new infinite families of β elements in $\pi_*(S)$. In particular, this completes the determination of the 3-primary Hurewicz image $\pi_*(S) \to \pi_*(tmf)$. The main technical work involves an Adams-Novikov spectral sequence computation in the 143-stem; this is greatly aided by a computer program written by Guozhen Wang which calculates the additive and partial multiplicative structure of the Adams-Novikov E_2 page for the sphere in relevant degrees. This is joint work with Katsumi Shimomura. (Received August 30, 2021)