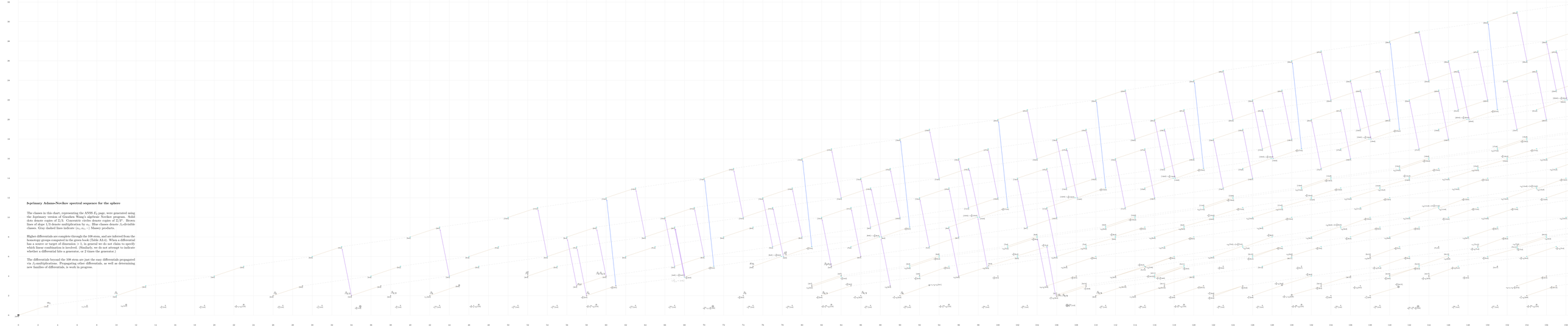

**3-primary Adams-Novikov spectral sequence for the sphere**

The classes in this chart, representing the ANSS $E_2$ page, were generated using the 3-primary version of Geozhen Wang's algebraic Novikov program. Solid dots denote copies of $\mathbb{Z}/3$. Concentric circles denote copies of $\mathbb{Z}/3^k$. Brown lines of slope 1/3 denote multiplication by $\alpha_1$. Blue classes denote $\beta_1$-divisible classes. Gray dashed lines indicate $\langle \alpha_1, \alpha_1, - \rangle$ Massey products.

Higher differentials are complete through the 108 stem, and are inferred from the homology groups computed in the green book (Table A3.4). When a differential has a source or target of dimension $> 3$, in general we do not claim to specify which linear combination is involved. (Similarly, we do not attempt to indicate whether a differential hits a generator, or 2 times the generator.)

The differentials beyond the 108 stem are just the easy differentials propagated via $\beta_1$-multiplication. Propagating other differentials, as well as determining new families of differentials, is work in progress.