ABSTRACT. This series of talks has two goals. The first one is to present a reasonably self-contained introduction to equivariant orthogonal spectra, a modern framework for equivariant stable homotopy theory. The second one is to report on joint work with Holger Reich, in which we give a natural construction and a direct proof of the Adams isomorphism for equivariant orthogonal spectra. In particular I will define and explain all the technical terms used in the following paragraph, which is a more detailed abstract for the last talk of the series.

“For any finite group $G$, any normal subgroup $N$ of $G$, and any orthogonal $G$-spectrum $X$, we construct a natural map $A$ of orthogonal $G/N$-spectra from the homotopy $N$-orbits of $X$ to the derived $N$-fixed points of $X$, and we show that $A$ is a stable weak equivalence if $X$ is $N$-free. This recovers a theorem of Lewis, May, and Steinberger in the equivariant stable homotopy category, which in the case of suspension spectra was originally proved by Adams. We emphasize that our ‘Adams map’ $A$ is natural even before passing to the homotopy category. One of the main tools we develop is a fibrant replacement construction with good functorial properties, which we believe is of independent interest.”