Between characteristic zero and characteristic p

Abstract. In classical algebraic geometry, there is often a stark difference between the behavior of fields of characteristic zero (such as the complex numbers) and fields of characteristic p (such as finite fields). For example, the equation $x^p = 1$ has p distinct solutions over the field of complex numbers, but only one solution over any field of characteristic p. In this series of talks, I will give an informal introduction to the theory of structured ring spectra. In this setting, one can study "fields" which in some sense lie between characteristic zero and characteristic p. I'll discuss some of the curious and surprising features of algebraic geometry in these intermediate regimes, focusing on the behavior of roots of unity.