From *L*-functions to their linear combinations

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L-functions are meromorphic functions on the complex plane that are defined correspondingly to arithmetic objects such as Dirichlet characters, Fourier coefficients of modular forms, hyperelliptic curves over finite fields and automorphic representations. This talk will start with a theoretical framework by presenting the conditions that *L*-functions satisfy. We will then proceed with the zero distribution of *L*-functions, which has been studied very diligently by analytic number theorists, especially for the last 50 years. In addition to the famous Riemann hypothesis, other interesting conjectures have been proposed about them. Yet there are other important functions that are not *L*-functions but are linear combinations of them, such as the Hurwitz zeta function and the Epstein zeta function. We will present a review of results that are known about their zeros.

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