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The Briot-Bouquet systems and the center families for holomorphic differential equations

"Center" is an important type of singularity in dynamical systems. For holomorphic differential equations, the existence of (isochronous) center families depends largely on the eigenvalues of the linear part. One way to study this problem is by translating it into the so-called "Briot-Bouquet systems" on the phase space. In this talk, we will first introduce briefly the background and then describe in somewhat details the program in dimension three.