Integrability and linearizability of 3-dimensional quadratic systems

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This presentation focuses on the aspects of integrability and linearizability in the context of systems of three-dimensional quadratic differential equations. The discussion centers on systems that display symmetry with respect to the plane $y = 0$. Our research demonstrates that all integrable systems within this specific family possess at least one first integral of the Darboux type. Additionally, our investigation delves into the concept of linearizability. We examine the necessary conditions for linearizability and identify families of systems that satisfy these conditions. Through the application of various methods, we establish sufficient conditions to prove the linearizability of these systems across most families, with the exception of a particular case.