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Parameter Estimation in Dynamical Systems Based on Latent Variables

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Abstract : A novel mathematical approach is suggested, which facilitates a compressed representation and efficient validation of parameter-rich ordinary differential equation models describing the dynamics of complex, especially biology-related, systems and which is based on identification of the system's latent variables. In particular, an efficient parameter estimation method for the compressed non-linear dynamical systems is developed. The method is applied to the so-called 'power-law systems' being non-linear differential equations typically used in Biochemical System Theory.

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