

Model reduction based optimization in field-flow fractionation

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We discuss the application of model order reduction to optimal control problems governed by coupled systems of the Stokes-Brinkman and advection-diffusion equations. Such problems arise in field-flow fractionation processes for the efficient and fast separation of particles of different size in microfluidic flows. Our approach is based on a combination of interpolatory projection methods and POD-DEIM techniques for model reduction of the semidiscretized optimality system. Numerical results demonstrate the properties of this approach.