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**Ugur G. Abdulla\*** ([abdulla@fit.edu](mailto:abdulla@fit.edu)), 150 West Univ Blvd, Melbourne, FL 32901. *Recent Advances in Optimal Control of Nonlinear Parabolic Free Boundary Problems.*

The talk will address the recent development in optimal control of the free boundary systems with distributed parameters. Optimal control of singular PDE which is a distributional formulation of Stefan type free boundary problems will be analyzed. Existence of the optimal control, discretization and the convergence of the method of finite differences, Frechet differentiability and optimality conditions in Besov spaces, new embedding theorem for Sobolev functions and uniform Hölder continuity of the sequence of multilinear interpolations of the discrete optimal controls will be discussed. (Received January 19, 2021)