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Subordination Principle for Fractional Evolution Equations

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In recent decades, evolution equations with fractional order differential operators attracted the attention of researchers, since they offer a perspective in the modeling of complex phenomena that traditional differential equations may not capture adequately. A useful approach in the study of fractional evolution equations is the so-called subordination principle, which allows constructing solutions to complex fractional evolution equations from the solutions of classical integer order equations or simpler fractional order ones. It is an efficient tool for establishing well-posedness and obtaining integral representations of the solution, for the study of regularity, asymptotic behavior, related inverse problems, etc. In this talk some techniques in establishing subordination relations for fractional evolution equations are discussed, which are based on Laplace transform and theory of Bernstein functions. Various applications of the subordination results are given.