1125-34-330   **Sougata Dhar*** (`sdhar@niu.edu`), 1305 N Annie Glidden Road, Apt 201, DeKalb, IL 60115, and **Qingkai Kong** and **Michael McCabe**. *Fractional boundary value problems and Lyapunov-type inequalities with fractional integral boundary conditions.*

We discuss boundary value problems for Riemann-Liouville fractional differential equations with certain fractional integral boundary conditions. Such boundary conditions are different from the widely considered pointwise conditions in the sense that they allow solutions to have singularities, and different from other conditions given by integrals with a singular kernel since they arise from well-defined initial value problems. We derive Lyapunov-type inequalities for linear fractional differential equations and apply them to establish nonexistence, uniqueness, and existence-uniqueness of solutions for certain linear fractional boundary value problems. Parallel results are also obtained for sequential fractional differential equations. An example is given to show how computer programs and numerical algorithms can be used to verify the conditions and to apply the results. (Received August 27, 2016)