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Sougata Dhar* (sougata_dhar@ymail.com), 810 Kimberly Dr., Apt 212, DeKalb, IL 60115, and **Qingkai Kong**. *The Lyapunov-type inequality for third order and odd-order equations and application to the boundary value problems.*

We obtain new Lyapunov-type inequalities for the third-order linear differential equation. Our work provides the sharpest results in the literature. Based on the above, we further establish new Lyapunov-type inequalities for more general third-order linear differential equations. We also extend our results to any odd order linear differential equations. Furthermore, by combining these inequalities with the “uniqueness implies existence” theorems by several authors, we establish the uniqueness and hence existence-uniqueness for several classes of boundary value problems for third-order linear equations as well as odd order linear equations. (Received August 30, 2015)