



Separation and Disconjugacy

Authors: [Richard C. Brown](#),
Keywords: Separation, Symmetric second order differential operator, Disconjugacy, Limit-point.
Date Received: 21/11/02
Date Accepted: 25/03/03
Subject Codes: 26D10, 34C10, 34L99, 47E05.
Editors: [A. M. Fink](#),

Abstract: We show that certain properties of positive solutions of disconjugate second order differential expressions $M[y] = -(py')' + qy$ imply the separation of the minimal and maximal operators determined by M in $L^2(I_a)$ where $I_a = [a, \infty)$, $a > -\infty$, i.e., the property that $M[y] \in L^2(I_a) \Rightarrow qy \in L^2(I_a)$. This result will allow the development of several new sufficient conditions for separation and various inequalities associated with separation. Some of these allow for rapidly oscillating q . It is shown in particular that expressions M with *WKB* solutions are separated, a property leading to a new proof and generalization of a 1971 separation criterion due to Everitt and Giertz. A final result shows that the disconjugacy of $M - \lambda q^2$ for some $\lambda > 0$ implies the separation of M .



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