

LAUDATUM

B M BROWN AND W D EVANS

Michael Eastham received his early education in Manchester Grammar School and Merton College, Oxford. In 1959, after a successful undergraduate career, he was awarded a Domus Senior Scholarship by Merton College to enable him to pursue postgraduate studies under the guidance of E.C.Titchmarsh. In 1961, in recognition of the excellence of the research for his D.Phil thesis, he was presented with the prestigious Senior Mathematical Scholarship by the University of Oxford. In 1978 he was awarded the Keith Prize and Gold Medal by the Royal Society of Edinburgh for his contribution to classical analysis, and was made a Fellow of the Royal Society of Edinburgh in 1982.

After a year as Junior Research Fellow of Merton College, Michael left Oxford in 1962 to take up an appointment at Reading University. Later he held positions in the universities of Southampton, London (Chelsea College and King's College) where he was Professor of Pure Mathematics 1980-1988, and Bahrain. At present he is an honorary Professorial Fellow of the University of Wales at Cardiff.

He has made a significant contribution to classical analysis, with an impressive output of 4 books and over 100 papers to date. His main area of expertise is the spectral theory of linear ordinary differential equations. Of notable significance is his work on the asymptotics of solutions. Using the technique of repeated diagonalisation with consummate skill and efficacy, he has obtained powerful results on asymptotics in a number of papers which were the basis of his well-known book on the subject. His results have enabled him and his students to make a comprehensive analysis of the deficiency index problem for equations with suitably smooth coefficients. In recent years he has developed his work on asymptotics in a manner suitable for inclusion as an algorithm that can be realised on a computer, and has applied his methods effectively to a problem of considerable current interest, namely, that of the location of Sturm-Liouville resonances. Out of Michael's long and impressive list of publications, the papers listed below are particularly noteworthy, and are good examples of the power of his analysis.

Michael has been a leading figure in the subject for the last forty years. He has lectured on his work in many countries, and his books have become standard texts. He continues to be very active in research, his current main areas of activity being spectral concentration and resonance problems.

SELECTED PUBLICATIONS

1. B. M. Brown and M. S. P. Eastham. Analytic continuation and resonance-free regions for Sturm-Liouville potentials with power decay. *J. Comp. Appl. Math.*, to appear, 2002.

This *Laudatum* will appear in a future edition of the Journal of Computational and Applied Mathematics.

2. B. M. Brown, M. S. P. Eastham, and D. K. R. McCormack. Spectral concentration and rapidly decaying potentials. *J. Comput. Appl. Math.*, 81(2):333–348, 1997.
3. B. M. Brown, M. S. P. Eastham, and D. K. R. McCormack. Resonances and analytic continuation for exponentially decaying Sturm-Liouville potentials. *J. Comput. Appl. Math.*, 116(1):181–193, 2000.
4. M. S. P. Eastham. On the gaps in the spectrum associated with Hill’s equation. *Proc. Amer. Math. Soc.*, 21:643–647, 1969.
5. M. S. P. Eastham. On a limit-point method of Hartman. *Bull. London Math. Soc.*, 4:340–344, 1972.
6. M. S. P. Eastham. Gaps in the essential spectrum of even-order self-adjoint differential operators. *Proc. London Math. Soc. (3)*, (34) :213-230, 1977.
7. M. S. P. Eastham. Asymptotic theory and deficiency indices for differential equations of odd order. *Proc. Roy. Soc. Edinburgh Sect. A*, 90(3-4):263–279, 1981.
8. M. S. P. Eastham. The deficiency index of a second-order differential system. *J. London Math. Soc. (2)*, 23(2):311–320, 1981.
9. M. S. P. Eastham. On the number of solutions of right-definite problems with a convergent Dirichlet integral. *Proc. Roy. Soc. Edinburgh Sect. A*, 91:347–360, 1982.
10. M. S. P. Eastham. The asymptotic solution of linear differential systems. *Mathematika*, 32(1):131–138, 1985.
11. M. S. P. Eastham. The number of resonant states in perturbed harmonic oscillation. *Quart. J. Math. (Oxford) (2)*, 42: 49-55,1991.
12. M. S. P. Eastham. Antibound states and exponentially decaying Sturm-Liouville potentials. *J. London Math. Soc.*, to appear, 2002.
13. M. S. P. Eastham, C. T. Fulton, and S. Pruess. Using the SLEDGE package on Sturm-Liouville problems having nonempty essential spectra. *ACM Trans. Math. Software*, 22:423–446, 1996.
14. M. S. P. Eastham and J. B. McLeod. The existence of eigenvalues embedded in the continuous spectrum of ordinary differential operators. *Proc. Roy. Soc. Edinburgh Sect. A*, 79:25–34, 1977.
15. M. S. P. Eastham and J. B. McLeod. Non-resonance for linear differential systems. *Proc. Roy. Soc. Edinburgh Sect. A*, 111(1-2):103–122, 1989.