

Contents

1	Definition and Basic Properties of Virtual Turning Points	1
1.1	A Brief Survey of the Exact WKB Analysis of the Schrödinger Equation	1
1.2	WKB Analysis of Higher Order Differential Equations in the Small	19
1.3	The Impact of the Work [BNR] of Berk, Nevins and Roberts	26
1.4	A Virtual Turning Point—a Gift of Microlocal Analysis to the Exact WKB Analysis	28
1.5	The Relevance of Virtual Turning Points and the Connection Formula for WKB Solutions of a Higher Order Differential Equation	39
1.6	How to Locate a Virtual Turning Point with the Help of a Computer	41
1.7	The Relevance of a Virtual Turning Point to the Bifurcation Phenomena of Stokes Curves	42
1.8	s -Virtual Turning Points for Holonomic Systems.	44
2	Application to the Noumi-Yamada System with a Large Parameter	51
2.1	Introduction	51
2.2	$(NY)_\ell$ and $(NYL)_\ell$ with a Large Parameter	52
2.3	Stokes Geometry of $(NY)_{2m}$	54
2.4	A Bidirectional Binary Tree	59
2.5	Growing and Shrinking of a Bidirectional Binary Tree.	70
3	Exact WKB Analysis of Non-adiabatic Transition Problems for 3-Levels	79
3.1	Non-adiabatic Transition Problems for Three Levels—Generalization of the Landau-Zener Model	79

3.2	Examples of Complete Stokes Geometries for Non-adiabatic Transition Problems	83
3.3	Computation of Transition Probabilities	97
Appendix A: Integral Representation of Solutions and the Borel Resummed WKB Solutions		111
References.		121
Index		125

Virtual Turning Points

Honda, N.; Kawai, T.; Takei, Y.

2015, XII, 126 p. 47 illus., 6 illus. in color., Softcover

ISBN: 978-4-431-55701-2