List of Contributed Papers

Part I

Hiroki TANABE: Linear Volterra integral equations of parabolic type

Howard JACOBOWITZ & Francois TREVES: Aberrant CR Structures

Daisuke FUJIWARA & Hideki OMORI: An example of a globally hypoelliptic operator

Sigeru MIZOHATA: On the hyperbolicity in the domain of real analytic functions and Gevrey classes

Seiji UKAI & Kiyoshi ASANO: The Euler limit and initial layer of the nonlinear Boltzmann equation

Masaya YAMAGUTI & Masayoshi HATA: Weierstrass's function and chaos

Mitsuru IKAWA: On the distribution of the poles of the scattering matrix for two strictly convex obstacles

Kyûya Masuda: On the global existence and asymptotic behavior of solutions of reaction-diffusion equations

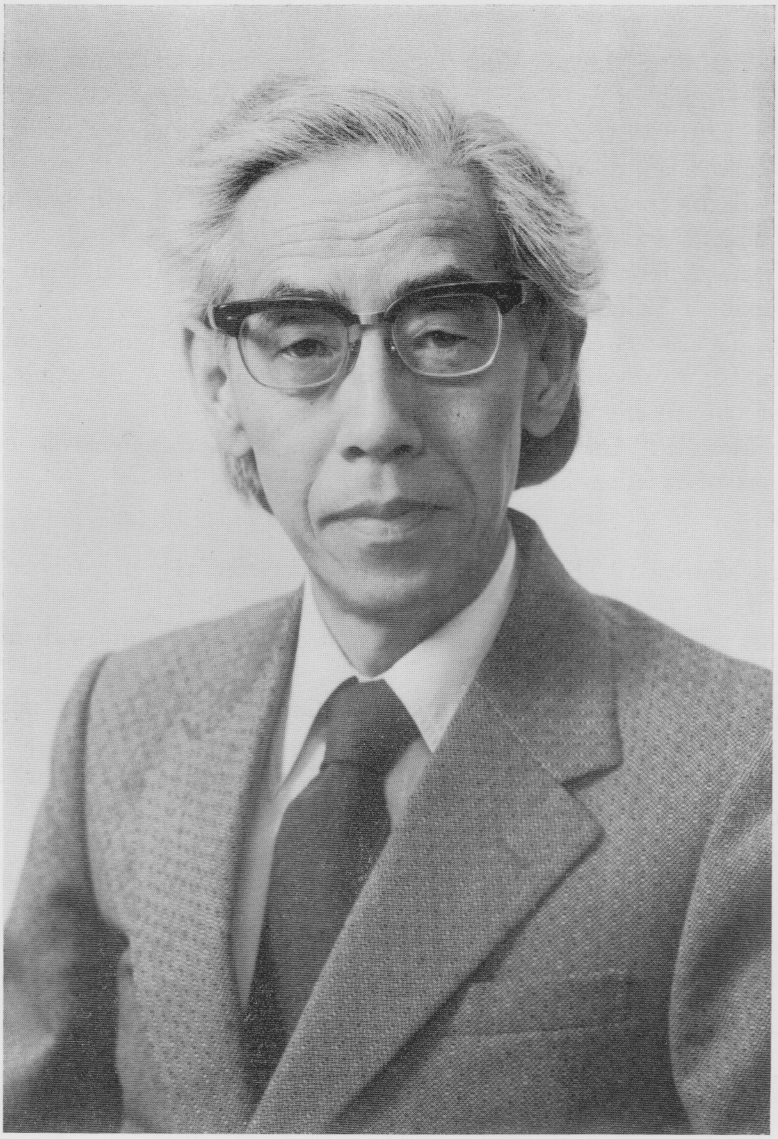
Part II

Richard Melrose: The Cauchy problem for effectively hyperbolic operators

Johannes SJÖSTRAND: Analytic wavefrontsets and operators with multiple characteristics

Kunihiko KAJITANI: Local solution of Cauchy problem for nonlinear hyperbolic systems in Gevrey classes

G. F. D. DUFF: Particle path length estimates for the Navier Stokes equations in three space dimensions



Taira SHIROTA

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DEDICATION

Professor Taira Shirota celebrated his sixtieth anniversary on November 1st, 1982. His friends and admirers heartily expressed thier joy to this occasion, and some contributed papers. The present issue of the Hokkaido Mathematical Journal, fully dedicated to Professor Shirota, is an outcome of such acts.

Shirota is originally a disciple of Professor Hidetaka Terasaka at Osaka University and started his research career in the field of Topology. It is in this period that Shirota studied topological linear spaces and contributed to the theory, by presenting several, now well-known, counter-examples. However, soon after, he was introduced to the study of partial differential equations by professor Mitio Nagumo. Shirota was then mainly interested in the general theory of linear partial differential operators, such as uniqueness and well-posedness of the Cauchy problem, propagation of regularities and related topics. Shirota's methods are since then characterized by his clear insight and his keen sense to new techniques, free from classical routines.

Shirota is more or less of the same generation as Professor Sigeru Mizohata and Masaya Yamaguti. In 1950's and early 1960's when Shirota was in Osaka while Mizohata and Yamaguti in Kyoto, researches of general linear partial differential operators in Japan were first blossomed. Shirota then moved to Hokkaido University, and assumed there one of the most famous Chairs of Analysis in Japan. Actually in his office is kept a divan, lying on which the late Professor Kiyoshi Oka, on his visit to Sapporo over some forty years ago, had got one of his genial ideas in the function theory of several complex variables.

In Sapporo, Shirota began to study systematically hyperbolic mixed, i. e., initial-boundary value, problems. With his close collaborators, he, first though in a rather involved way, characterized well-posedness of the problem in the constant coefficient case. Here they relied on, and thus revived, the classical idea of the reflection coefficients. Meanwhile, Shirota, in particular, determined propagation of analyticity for a certain class of hyperbolic mixed problems. His school also attacked the variable coefficient case and their results are now widely known. Through his activities, Shirota acquired friends abroad, and he spent a year in Nice invited by Professor Jacques Chazarain. Shirota now extends his study to certain non-linear problems arising in fluid dynamics, applying to these problems his previously obtained results and methods in linear hyperbolic mixed problems.

Since some years Shirota has organized a meeting in Sapporo every summer. From Osaka, Kyoto, Tokyo or other places come active researchers working in partial differential equations and in neighboring fields. At every meeting, originality of themes makes participants deeply satisfied, and Shirota's candid hospitality is particularly appreciated.

According to the Oriental Calendar, to each year are assigned one of Twelve Beasts of Oriental Zodiac and either "younger" or "elder" part of one of Five Elements. Since 60 is the least common multiple of 12 and 10, everyone is supposed to return to a newly born child on his sixtieth anniversary.

We wish Professor Shirota still strengthens his present vigor in his researches and in other activities, by adding a newly born baby's vivacity and vitality.

Rentaro Agemi
Koji Kubota
Atsushi Yoshikawa

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Mathematical papers of T. Shirota

[1] On systems of structures of a completely regular space, Osaka Math. J. 2 (1950), 131-143.
[2] On spaces with a complete structure, Proc. Japan Acad. 27 (1951), 513-516.
[3] A class of topological spaces, Osaka Math. J. 4 (1952), 23-40.
[4] A generalization of a theorem of I. Kaplansky, Osaka Math. J. 4 (1952), 121-132.
[5] The space of pseudo-metrics on a complete uniform space, Osaka Math. J. 5 (1953), 147-153.
[6] On ideals in rings of continuous functions, Proc. Japan Acad. 30 (1954), 85-89.
[7] On locally convex vector spaces of continuous functions, Proc. Japan Acad. 30 (1954), 294-298.
[8] On completely continuous operators on locally convex vector spaces, Proc. Japan Acad. 30 (1954), 837-840.
[9] On solutions of a partial differential equation with a parameter, Proc. Japan Acad. 32 (1956), 401-405.
[10] On Cauchy problem for linear partial differential equations with variable coefficients, Osaka Math. J. 9 (1957), 43-59.
[11] The initial value problem for linear partial differential equations with variable coefficients I, Proc. Japan Acad. 33 (1957), 31-36.
[12] The initial value problem for linear partial differential equations with variable coefficients II, Proc. Japan Acad. 33 (1957), 103-104.
[13] The initial value problem for linear partial differential equations with variable coefficients III, Proc. Japan Acad. 33 (1957), 457-461.
[14] A remark on the abstract analyticity in time for solutions of a parabolic equation, Proc. Japan Acad. 35 (1959), 367-369.
[15] A unique continuation theorem of a parabolic differential equation, Proc. Japan Acad. 35 (1959), 455-460.
[16] Linear hyperbolic partial differential equations, (Japanese) Sûgaku 10 (1959), 236-247.
[17] A theorem with respect to the unique continuation for a parabolic differential equation, Osaka Math. J. 12 (1960), 377-386.
[18] A remark on my paper "A unique continuation theorem of a parabolic differential euqation", Proc. Japan Acad. 36 (1960), 133-135.

[19] A remark on the unique continuation theorem for certain fourth order elliptic equations, Proc. Japan Acad. 36 (1960), 571-573.

[20] On the example of an inhomogeneous partial differential equation without distribution solutions, Proc. Japan Acad. 37 (1961), 243-245.

[21] On division problems for partial differential equations with constant coefficients. General Topology and its Relations to Modern Analysis and Algebra (Proc. Sympos., Prague, 1961), 316-321, Academic Press, New York ; Publ. House Czech. Acad. Sci., Prague, 1962.

[22] On the propagation of regularity of solutions of partial differential equations with constant coefficients, Proc. Japan Acad. 38 (1962), 587-590.

[23] On the propagation of regularities of solutions of partial differential equations, Proc. Japan Acad. 39 (1963), 120-124.

[24] (with K. Asano) Remark on eigenfunctions of the operators $-\Delta+(qx)$, Proc. Japan Acad. 42 (1966), 1044-1049.

[25] (with K. Kubota) On certain condition for the principle of limiting amplitude, Proc. Japan Acad. 42 (1966), 1155-1160.

[26] (with K. Kubota) On certain condition for the principle of limiting amplitude II, Proc. Japan Acad. 43 (1967), 458-463.

[27] (with K. Kubota) The principle of limiting amplitude, J. Fac. Sci. Hokkaido Univ., Ser. I, 20 (1967), 31-52.

[28] (with K. Asano) On certain mixed problem for hyperbolic equations of higher order, Proc. Japan Acad. 45 (1969), 145-148.

[29] (with K. Asano) On certain mixed problem for hyperbolic equations of higher order II, Proc. Japan Acad. 45 (1969), 388-393.

[30] (with R. Agemi) On certain mixed problem for hyperbolic equations of higher order III, Proc. Japan Acad. 45 (1969), 854-858.

[31] (with K. Asano) On mixed problems for regularly hyperbolic systems, J. Fac. Sci. Hokkaido Univ., Ser. I, 21 (1970), 1-45.

[32] (with R. Agemi) On necessary and sufficient conditions for L^2-well-posedness of mixed problems for hyperbolic equations, J. Fac. Sci. Hokkaido Univ., Ser. I, 21 (1970), 133-151.

[33] On the propagation speed of hyperbolic operator with mixed boundary conditions, J. Fac. Sci. Hokkaido Univ., Ser. I, 22 (1972), 25-31.

[34] (with R. Agemi) On necessary and sufficient conditions for L^2-well-posedness of mixed problems for hyperbolic equations II, J. Fac. Sci. Hokkaido Univ., Ser. I, 22 (1972), 137-149.

[35] On mixed problems for hyperbolic equations, (Japanese) Sûgaku 24, (1972), 1-13.

[36] On certain L^2-well posed mixed problems for hyperbolic system of first order, Proc. Japan Acad. 50 (1974), 143-147.

[37] On structures of L^2-well-posed mixed problems for hyperbolic operators. Fourier integral operators and partial differential equations (Colloq. Internat., Univ. Nice, Nice 1974), 235-254. Lecture Notes in Math., Vol. 459, Springer Berlin, 1975.

[38] (with T. Ohkubo) On structures of certain L^2-well-posed mixed problems for hyperbolic systems of first order, Hokkaido Math. J. 4, (1975), 82-158.

[39] (with S. Sato) Remarks on modified symmetrizers for 2×2 hyperbolic mixed problems, Hokkaido Math. J. 5 (1976), 120-138.

[40] (with M. Imai) On a parametrix for the hyperbolic mixed problem with diffractive lateral boundary, Hokkaido Math. J. 7 (1978), 339-352.

[41] On a parametrix for the hyperbolic mixed problem with diffractive lateral boundary II, Hokkaido Math. J. 9 (1980), 1-17.

[42] On the stability of planar step shock fronts in multi-dimensional space, Hokkaido Math. J. 11 (1982), 337-352.