IN MEMORY OF GAETANO FICHERA

WOLFGANG L. WENDLAND

Dear Dr. Matelda Fichera, Prof. Dr. Maria Pia Colautti, Dr. Anna Maria Fichera, Dr. Massimo Fichera,

Gaetano Fichera passed away at the age of 74 June 1st just 10 years ago. He left behind his dear wife Dr. Mathelda Fichera after 44 years of happy togetherness - and the world of mathematics.

I feel very honored to be asked to say a few words at this beautiful place not too far from his birth place.

Personally I had had the privilege to meet the famous Gaetano Fichera the first time at the Oberwolfach conference on partial differential equations in 1969 where he gave a lecture on *Orthogonal invariants of elliptic operators* in the variety of Hilbert spaces and gave estimates on eigenvalues. He was an extraordinary, real gentleman, very handsome and impressive, being polite and kind to us youngsters; caring even for my work and giving advice in the discussions. His lectures were tastefully prepared and delivered in elegance with brilliant clarity. The Sicilian gentleman! In 1970 at the Dundee conference on ordinary and partial differential equations organized by Norrie Everitt I could listen to Gaetano's four lectures in a series on "Some topics in the theory of partial differential equations" and looking back, this seems like becoming a guideline of my own work.

At the next Dundee conference in 1772 I have met him again; vividly I remember his lectures on "Abstract unilateral problems" corresponding to his fa-

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mous article on the existence in nonlinear elasticity in the *Handbuch der Physik* that paved the way of the theory of elasticity till today. By the way, also Conti and Stampaccia attended this conference.

Later on Gaetano Fichera accepted invitations from Erhard Meister and myself to Oberwolfach conferences where he then always was the regal master, and his comments and discussions made us rather anxious. In 1978, on one of these occasions I presented some first results achieved from my - at that time - Darmstadt group and George Hsiao on the Zaremba problem in the framework of boundary integral equations. Gaetano had treated this problem already in 1952 and he remarked that we were pulling out an old horse. As it turned out, this became merely an old stubborn donkey - till these days the regularity near the collision points is not really known. But since then I possess his great book on singular integral equations in Italian language. Recently I learned from George Hsiao Fichera's trace spaces, which most elegantly incorporate boundary conditions into variational formulations (Springer Lecture Notes 1965). His book on *Numerical and Quantitative Analysis* (Pitman 1978) shows masterly that successful numerical analysis can only exist on the basis of rigorous mathematical analysis, a message also to modern scientific computing. In this book, the eigenvalue problem for elliptic boundary value problems is treated for the nowadays called "Fichera corner" which became the benchmark problem in the Priority Research Program of the German Research Foundation (1989/1995) and nightmarish for some engineering participants.

Gaetano Fichera was most diligent with an enormous spectrum of interests: from applied mathematics and mechanics to theoretical mathematics. For his 70th birthday, Olga Oleinik gave a wonderful survey on his work - at that time published in the book by Paolo E. Ricci. And in the book of the 2nd Taormina International Symposium, Vladimir Maz'ya wrote a very cordial article in memory of Gaetano Fichera. In Alberto Cialdea's *Homage to Gaetano Fichera* I have learned that Gaetano obtained his degree in mathematics at the age of 19 years, became full professor in mathematics at the University of Trieste at the age of 27 years and was since 1956 full professor and from 1992 till 1996 Professore Fuori Ruolo at La Sapienza in Rome. He was member of 14 Academies, worked on elasticity, ordinary and partial differential equations, the calculus of variations, functional analysis, approximation theory and integration, numerical analysis and the history of mathematics. He published 256 papers and 18 books. His influence and his distributions have significantly shaped modern mathematics.

My teacher, late Wolfgang Haack has claimed that most mathematician's work will be forgotten after two generations, that means after about 60 years, and only very few will become eternal. Gaetano Fichera surely belongs to the

latter small group and mathematicians will remember him forever.
Thank you.

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