

IN RICORDO DI

Gabriele Francesco Giuliani (1953-2012)



Gabriele Francesco Giuliani, Professor of Physics at Purdue University in West Lafayette, Indiana, and Fellow of the American Physical Society, passed away on November 22, 2012 after a long and, in the last few months, dire battle with cancer – an illness he bravely survived for more than 12 years.

Born in Ascoli Piceno, Italy, in 1953, Giuliani was educated at the University of Pisa where he graduated cum laude in 1976, Supervisor Professor Mario Tosi. He continued his studies at the Scuola Normale Superiore in Pisa and was a researcher in Rome and in Trieste, under the guidance of Professors Mario Tosi and Erio Tosatti. In 1979 he met Professor Albert Overhauser, who was to be the decisive influence in his career. Fascinated by the physics of broken symmetry phases in simple metals, he joined Overhauser at Purdue University, where he eventually became a member of the physics faculty in 1984 – not before completing a brief but extremely fruitful postdoctoral experience at Brown University with Professor John Quinn.

Gabriele Giuliani's field of research was the theoretical study of the properties of low-dimensional electronic systems, particularly those that are controlled by electron-electron interactions. Many of his contributions are widely known and some have become textbook material. These include: the calculation of plasmon dispersions in semiconductor superlattices; the discovery of the singular $T^2 \ln T$ behavior of the quasiparticle linewidth as a function of temperature in a two-dimensional electron gas; the prediction of a ferromagnetic phase transition in the two-dimensional electron gas in the quantum Hall regime (experimentally observed); an elegant analysis of the role of impurities in the quantum Hall effect, and numerous contributions to the foundations of the theory of Fermi liquids. In 2003 he also directed a course on "Electron liquid paradigm in

condensed matter physics" at the International School of Physics "Enrico Fermi" in Varenna. In addition, he is author of a monograph on the "Quantum theory of the electron liquid" (Cambridge University Press, 2005), which has become a standard reference for beginning students and advanced researchers.

Giuliani was known in physics circles for his flamboyant personality, his sharp-witted sense of humor, and his unremitting critical eye. Shunning the superficial and the fashionable he always strove for genuine accomplishment and complete intellectual honesty. His criticism could be abrasive, but never intentionally so. An avid soccer player and sports critic to his last days, Giuliani successfully coached soccer teams of all age groups at Purdue and in the Lafayette area. Other interests of his were Hammond-based blues, competitive auto racing, Yellowstone wildlife, and all kinds of "italica", ranging from spaghetti alla carbonara "better than sex", to espresso brews, to Italian politics which he followed with a mixture of wit, concern, and shame, to the mythology of his beloved hometown, Ascoli Piceno. Above all, he loved his family his mentors, and his students (several of which are now professors in various countries), and enjoyed convivial gatherings, where his ability to entertain as well as to provoke with humorous word play was unmatched. He died as he had lived, joyously, defiantly, and deeply engaged in his own wonderful life. The fruits of his scientific ingenuity will outlive him. Gabriele Giuliani is survived by his wife, Pamela Wilhelm-Giuliani, and his children Daniela, Adriana and Giuseppe. In Italy he is survived by his mother Angela, his brother Alessandro, and his sister Carla Cutolo.

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