

Kerr Roy

Position: Professor Emeritus
University of Canterbury



I Scientific Work

- 1) During the first period of 4 weeks I worked on a paper
“On the Discovery of the Kerr Metric”, Proc. 11th Marcel Grossman Conf.
- 2) The second period of 4 weeks was principally spent helping Prof. Ruffini with his manuscript for the Kerrfest volume, and working on my own manuscript
“Discovering the Kerr and Kerr--Schild metrics”
for the same Kerrfest volume.
- 3) The two days in April were spent at an Italian/Korean conference in Seoul.
- 4) Jun 24 – July 7, 2007: The first week was spent in Pescara at an Italian/Korean GR Conference. I presented a paper “Are Boyer-Lindquist coordinates the best to use around a black hole?”. I then went to Nice with Professor Ruffini to discuss a future branch of ICRA.
- 5) 2008: Working with Donato Bini and Andrea Geralico on a new approach to the Kerr-Schild metrics and generalizations of the Black Hole metrics when other fields present.

II Conferences and educational activities

Conferences and Other External Scientific Work

I gave invited talks at the following conferences:

Jun 2006: “Supermassive Black Holes”, Santa Fe, NM.

Jun 2006: “Marcel Grossman Conf.”, Berlin.

Apr 18: “Italian/Korean meeting”, Seoul, Korea.

Jun 24-28 “The Galactic Center”, Castle Ringberg, Germany.

Jun 31 "Italian/Korean Meeting", Pescara.

Nov 13, an invited talk in the "International Public Lecture series" at Melbourne Uni. "Unravelling Einstein's Secrets"

2008:

Feb 10-15: "Observational evidence for Black Holes in the Universe". Kolkata, India

Feb 20: "Bose Memorial Lecture ", Kolkata, India

Apr : "J.L.Synge Memorial Lecture", Trinity College, Dublin.

May28-31: "5th Italian-Sino Workshop", Taipei-Hualien, Taiwan,

Aug 11-15: "Bos' Art Conference", Bosa, Sardinia.

Roy Kerr retired from his position as Professor of Mathematics at the University of Canterbury in February of this year. He had been in the Department for twenty-two years, and its Head for the past ten. In this note I shall record some of the facts and legends known and circulated about his life and career so far.

Roy first came to the attention of New Zealand's mathematical community in 1950, when as a pupil of St Andrew's College in Christchurch he sat the University Entrance Scholarship. In those days Scholarship Mathematics consisted of two papers, and was marked out of 600; Roy got 298. This disappointing result was almost entirely explained by the fact that he'd turned up in the afternoon for one of the papers when it had in fact been scheduled in the morning. Despite this oversight, he did get a scholarship, and in his first year at Canterbury College, attended the lectures for Stage III. Regulations, however, permitted him to sit only the stage II examinations. Next year he was sitting in on the Masters lectures.

His undergraduate career was not given wholly to mathematics and science; he admits to having played a lot of billiards, and in 1952 represented his College in boxing at the Easter Tournament, as a light-welterweight. I recall W.W. Sawyer, then a lecturer at Canterbury, expressing alarm and dismay over Roy's pugilism, on the ground that he didn't want the best brain he'd encountered in a student scrambled by a well-thrown punch; but history seems to confirm that Roy came to no lasting harm over it.

In 1955 he received a MSc with first class honours, and went to Cambridge with a Sir Arthur Sims Empire Scholarship. He was awarded a PhD in 1960, for a thesis on the equations-of-motion problem in general relativity. This work appeared in a series of three uncharacteristically long papers in *Nuovo Cimento*, and although later overshadowed by the Kerr metric, was extensively cited. He went on to a post-doctoral post at Syracuse University, and then to work with a US Air Force relativity group at Wright-Patterson Field, in Ohio. The USAF were interested in antigravity devices; one of the tasks of the relativity group was to assess and report on such devices proposed to it by inventors. Roy remarked to me once that these devices usually involved massive

flywheels spinning at high speeds; most of the inventors specified that these flywheels be made of gold or platinum.

In 1962 Roy moved to the University of Texas in Austin, where a relativity group had been formed. In his first year he produced the work which led to the two-page article in *Phys Rev Letters* describing the Kerr metric. Here we enter the realm of legend. In an interview printed in the University of Canterbury *Chronicle* of 11 March (on which this article relies heavily), Roy says that, although he knew that his metric represented the gravitational field of a rotating star, he did not then realise how important it was going to be. Some insight on how the realisation dawned may be got from a lively if somewhat disingenuous article on the First Texas Symposium on Relativistic Astrophysics published in *Physics Today* (August 1989). Although this describes an interesting attempt to rob Roy of the fruits of his labours, which seems to indicate that they were thought to be valuable, it also says that Roy's paper was not in fact mentioned by the summarizers at the end of the conference. But when recognition came, it was emphatic. Chandrasekhar, in his Ryerson Lecture of 1978, said: "In my entire scientific life, extending over forty-five years, the most shattering experience has been the realization that an exact solution of Einstein's equations of general relativity, discovered by the New Zealand mathematician Roy Kerr, provides the *absolutely exact representation* of untold numbers of massive black holes that populate the universe".

Roy returned to New Zealand in 1971, to the chair he has just vacated. He brought to us in Canterbury a sharpened sense of belonging to the international mathematical community and attracted many visitors, but his major contribution to the Department began when in 1983, after Gordon Petersen's early retirement, he took over the headship. Roy's style as HOD was at once uncompromising and dashing; in a series of moves which affronted some of our colleagues in other departments, who had grown comfortable with the traditional Canterbury view that Mathematics should be a low-cost department devoted to service teaching, he contrived to reduce student-staff ratios, encourage research, and equip the department with a computer system at the sort of cost hitherto associated with spectrographs. Morale rose markedly. In many respects Roy was an unusual figure in University administration; he had very little patience for the practice of wrapping self-interest up in politically correct pieties, and was perfectly willing to offend entrenched privilege. But he was successful, and we are the better for his efforts, and we love him for them.

Roy has received many awards, culminating in the Hughes Medal of the Royal Society of London in 1984, and has given many invited lectures. His retirement comes at a time when his remarkable faculties seem unimpaired. He has put it about that he will sail the seven seas in the ocean-going yacht he has recently bought. Perhaps new legends will arise; we await with interest, and wish him success and happiness.