

Sudarshan's Life and Work – Memories from a Long Association

N. MUKUNDA



2006 Conference for 75th birthday – '*Seven Science Quests*'

'V–A', Open Systems, Quantum Optics, Zeno effect;

Tachyons, Spin and Statistics, Symmetry

Early influences on ECG

R.E. Marshak, visit to TIFR 1953

P.A.M. Dirac, visit to TIFR 1954

J. Schwinger, at Harvard 1957–59

Work of 'Nobel class' 'V-A' Theory of Weak Interactions

Marshak 1991 talk – 'The Pain and Joy of a Major Scientific Discovery' – forgiveness from ECG for Marshak's Three Cardinal Blunders.

Later appreciation of 'V-A' from 1979 Physics Nobelists S. L. Glashow, A. Salam and S. Weinberg – *Current Science*, January 25, 2019 Special Section; *Resonance*, February 2019.

Salam (1985)

'All this was based on the work ... done by Sudarshan and Marshak. Instead of their being recognised ... others ... were for a long time credited with the same theory ... which was done after this work. We know it. All the people in the subject knew it. But somehow there was a conspiracy ... of silence on the subject which harmed him and recognition of his work'.

Diagonal Representation in Quantum Optics – result of close collaborations with Emil Wolf and Leonard Mandel at Rochester.

Two results in area of Symmetry

1957 – With Okubo and Marshak – Consequences of broken isospin symmetry for masses and magnetic moments of Σ -particles.

1963 – With Currie and Jordan – No Interaction Theorem in Classical Relativistic Hamiltonian Particle Dynamics.

Two results from our collaboration – 1960's

1949–50 Dirac Theory of Constrained Hamiltonian Dynamics – the Dirac Bracket and Jacobi Identity.

Unitary Representations of the Lorentz Group – Dirac 1945, Harish Chandra

1947 – real eigenvalues of certain hermitian generators shifted by $\pm i$

Contacts with India

S. N. Biswas, T. Pradhan, P. M. Mathews; Delhi University, University of Madras, Institute of Mathematical Sciences in Chennai.

Early 1970's – guided by Satish Dhawan and D. S. Kothari – Centre for Theoretical Studies at IISc, Bangalore → later Centre for Ecological Sciences, Centre for Atmospheric Sciences, Developmental Biology and Genetics Laboratory, Centre for High Energy Physics all at IISc.

1984: Directorship of IMSc, Chennai

Awards Dirac Medal, Majorana Prize, Padma Bhushan, Padma Vibhushan

Max Planck

'For it is work which is the favourable wind that makes the ship of human life sail the high seas, and as for the evaluation of the worth of this work, there is an infallible, time-honoured measure, a phrase which pronounces the final, authoritative judgement for all times: By their fruits ye shall know them!'