

A Short History of High-Energy and Gravitational Theory at Brandeis University

The high energy and gravitational theory program at Brandeis began in the late 1950's. The prominent senior members of the group were Professors Stanley Deser (member of the National Academy of Sciences, Dannie Heinemann award winner, and many other honors); Howard Schnitzer (Guggenheim fellow, Sloan Foundation fellow, fellow of the American Physical society); Marcus Grisaru; and Hugh Pendleton. A number of students have been trained by the group; among the most important are Kellogg Stelle (Deser) and Larry Abbott and Paul Townsend, FRS (Schnitzer). Postdoctoral fellows played a substantial part in the research activities of the group. A subset of the many postdocs are Mike Duff, Ulf Lindstrom, Dominco Seminara, Peter van Nieuwenhuizen, Andrew Waldron, Richard Woodard (Deser); Burt Ovrut, Dimitra Karabali, Steven Naculich, Rafael Nepomechie, Niclas Wyllard (Schnitzer); Warren Siegel (Grisaru).

The group has made a number of important contributions. As these cannot all be enumerated, we give a very selected list of highlights.

Among Deser's many and wide-reaching contributions was the ADM approach to general relativity; the study of the divergences and finiteness in quantum gravity loop expansions (in collaboration with students and postdocs); the discovery of supergravity (in collaboration with B. Zumino); topological massive gravity with R. Jackiw, conformal anomalies with A. Schwimmer, and many other significant contributions.

Schnitzer has a very wide range of interests. Among these was participation in the early development of current algebra in collaboration with S. Glashow and S. Weinberg; contributions to the development of the eight-fold way with S. Coleman; the discovery of the Reggeization of elementary particles in gauge theories with M. Grisaru; effective field theory with B. Ovrut; gauged WZW models with D. Karabali; discovery and development of level-rank duality in conformal field theory with S. Naculich; as well as a number of topics of current interest.

Grisaru was prominent in the extensive development of supersymmetry and supergravity, in collaboration with W. Siegel, M. Rocek, D. Zanon, and many others. Notable is the derivation of the Ward identities of supersymmetric theories in collaboration with Pendleton, which remains an important result.