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THE FIELDS INSTITUTE FOR RESEARCH IN MATHEMATICAL SCIENCES

GEOMETRIC MECHANICS SEMINARS

SPEAKER:

RUDOLF SCHMID
Department of Mathematics and Computer Science
Emory University

On the Topic:

"BRST Symmetries and Anomalies"

Becchi, Rouet, Stora and Tyutin first noticed in 1976 that in gauge field theories the effective actions, which are no longer gauge invariant have a new global symmetry, now called BRST symmetry. We introduce a geometric framework for this BRST symmetry in terms of local cohomology using local differential forms on the infinite jet bundle. With this we derive the classical BRST transformations of vector potentials and the ghost fields. Moreover the ghost field is identified with the canonical Maurer-Cartan form of the infinite dimensional Lie group of gauge transformations. We give a homotopy formula on the BRST bicomplex and with the introduction of Chern-Simon type forms we derive the associated descent equations and show that the non-abelian anomalies, which satisfy the Wess-Zumino consistency condition, represent cohomology classes in this BRST cohomology.

Tuesday, June 8, 1993

3:30 pm, room 3013

at

The Fields Institute

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