

# The Multisymplectic Formulation of Bosonic String Theory and 2+1 Gravitational Chern-Simons Theory

Arnoldo Guerra IV

The multisymplectic formalism is developed for a gravitational Chern-Simons theory in  $2 + 1$  dimensions, and bosonic string theory from the Nambu-Goto action. It is shown how the multisymplectic geometry of the covariant phase spaces provides a technique which uncovers the covariant constraint structure of the field theories listed above. In the case of the bosonic string theory it is found that the Lagrangian is regular while for the Chern-Simons theory the Lagrangian is singular.