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Thesis Title	<i>A journey to Connection</i>
Supervisor	Michael Tsamparlis, Retired Professor
Summary	The main purpose of this work is to reveal the strong connection between abstract algebra, differential geometry and Physics. After developing basic algebraic, topological, and geometrical structures, we continue with the idea of geometrical objects focusing on the construction of tensor fields. The derivative operation over relative geometrical objects shall be approached both geometrically (parallel transport) and algebraically so as to introduce fundamental tools (connection, autoparallels, geodesics, torsion, curvature) in the study of a space. Finally, we apply all the preceding mathematical techniques in Newtonian Mechanics in order to geometrize holonomic, or non-holonomic, constraints imposed on a dynamical system.
Key words	Manifold, Derivation, Connection, Mechanics, Constraint
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