

## APPENDIX . Fibre bundles, jet bundles and the Noether balance laws.

In this **Appendix** we sketch the basic notions concerning the differentiable manifolds and their mappings, fibre bundles (Appendix 1), jet bundles and the basic geometrical structures on these objects used above (metrics, connections of different type, etc. (Appendix II). Finally, in Appendix III we discuss the symmetries of Lagrangian problems and differential equations and present the Noether formalism in the form suited to the Euler-Lagrange systems with forces (sources in the case of Field Theory). For more detailed exposition of these topics we refer to the sources [?, 60, 70, 69, ?, 122, 138] (Differentiable manifolds, fiber bundles, metrics, connections), to [47, 71, 75, 106, 119] (Variational Calculus, Geometrical theory of differential equations, jet bundles ).