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| <b>Module:</b> | <b>Elective Advanced Lectures:<br/>Theoretical Physics</b> |
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| <b>Module No.:</b> physics70c |
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| <b>Course:</b> |  <b>Quark Distributions Functions (T)</b> |
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| <b>Course No.:</b> physics7506 |
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| Category | Type    | Language | Teaching hours | CP | Semester |
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| Elective | Lecture | English  | 2              | 3  | WT       |

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| <b>Requirements for Participation:</b> |
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| <b>Preparation:</b> |
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| Quantum Field Theory (physics755 or equivalent) |
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| <b>Form of Testing and Examination:</b> |
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| oral examination |
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| <b>Length of Course:</b> |
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| 1 semester |
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**Aims of the Course:**

By the end of the course, the student should be able to understand the formal parton model, renormalization of parton distributions, and current attempts to compute them on the lattice.

**Contents of the Course:**

Deep Inelastic Scattering; The Operator Product Expansion; Basics of the parton model; The formal parton model; Quark distributions and quasi-quark distributions; One loop corrections and renormalization; Lattice attempts to compute PDF

**Recommended Literature:**

Elliot Leader, Enrico Predazzi: An introduction to gauge theories and modern particle physics. Cambridge Monographs on Particle physics, Nuclear Physics and Cosmology 1996.

John Collins: Foundations of Perturbative QCD.

Cambridge Monographs on Particle physics, Nuclear Physics and Cosmology 2011.

Anthony W. Thomas, Wolfram Weise: The Structure of the Nucleon. Wiley-VCH Verlag Berlin 2001.

R. K. Ellis, W. J. Stirling, B. R. Webber: QCD and Collider Physics.

Cambridge Monographs on Particle physics, Nuclear Physics and Cosmology 2003.