

A részecskefizika kísérleti módszerei

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- 1, What are the three frontiers of experimental particle physics? What questions are they trying to answer and how?
- 2, Compare the three proposed types of experiments of the FCC: electron+positron, electron+hadron, hadron+hadron. What are their limits in the maximal energy? What are they useful for?
- 3, What type of technology is used to accelerate particles in modern synchrotrons such as the LHC? How do they work?
- 4, What is the luminosity of a p+p collider if there is 2500 bunches in a cycle, 10^{11} protons each and the transverse size is 50 micrometres.
- 5, What is the energy loss of a minimally ionising particle in 1m of lead via ionisation.
- 6, How do Cherenkov detectors work, what are they used for?
- 7, Explain the photon spectrum. (like in the 5th slideshow, 25th slide)
- 8, If a pion and a proton have 5 GeV energy and we have a 2m wide TOF detector with time resolution of 30 picoseconds then how well can we distinguish between them?
- 9, Compare the electric and hadronic calorimeters.
- 10, Explain semi-conductor detectors, how do they work, what kinds are there, what are they used for?
- 11, What is a TPC, how does it work and what are its advantages?
- 12, What did the Super-Kamiokande experiment detect and how does it work?