

1. How is the Higgs field and the Higgs boson connected? Why is there a particle at all? Is the boson itself the same as the fluctuation in the field?
2. How do you distinguish between neutral particles and antiparticles e.g. neutrons and antineutrons experimentally?
3. What kind of trace do we see if a muon hits a cloud chamber?
4. What exactly is SUSY?
5. How does mass defect fit in the standard model?
6. Off topic: Does someone do experiments on entangled photons?
7. In every picture of a hadron e.g. neutron we see three quarks. Why do these triplets not interact with their neighbors and build a crystal-like grid?
8. X-ray penetration depth into a substance seems inversely proportional with Z (cross section increases with heavier elements) but for neutrons cross section depends instead on the isotope. Which isotopes have small cross sections and which have large? Why those? Is there a "rule"?

9. We had a speaker today that talked about different kinds of experiments here at CERN. He also talked about dark matter. I once saw a documentary about dark matter where they tried to see dark matter through something called WIMPs (i think). Is there any experiment like that here at CERN?

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