Honors in EP

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The courses you can do to complete your honors is a subset of the available electives.

1	PH 303	Supervised Learning (runs in both semesters)	2-1-0-6
2	PH 523	Quantum Mechanics III	2-1-0-6
3	PH 534	Quantum Information and Computing	2-1-0-6
4	PH 563	Group Theory Methods in physics	2-1-0-6
5	PH 565	Semiconductor Physics	2-1-0-6
6	PH 567	Non linear Dynamics	2-1-0-6
7	PH 562	Continuum Mechanics	2-1-0-6
8	PH 540	Elementary Particle Physics	2-1-0-6
9	PH 557	Theoretical Condensed matter physics	2-1-0-6
10	PH 544	General Theory of Relativity	2-1-0-6
11	PH 554	Computational Many Body Physics	2-1-0-6
12	PH 564	Methods in Exp. Nuclear and Particle Physics	2-1-0-6
13	PH 580	Magnetism and Superconductivity	2-1-0-6
14	PH 587	B.Tech. Project I	2-1-0-6
15	PH 588	B.Tech. Project II	2-1-0-6

- The SLP and BTPs can be tagged as honors courses as well.
- Since these courses fall in the elective baskets as well, doing an honors allows you to play around and have courses which can be retagged to maximize your CPI as well.
- The courses span many different areas of physics so you can dive deeper into whatever area you find interesting.

A brief overview of a few courses.

General Theory of Relativity

- Introduction to Riemannian geometry and curved spaces; Einstein's field equations; Weak gravity; black holes
- The course is a bit on the tougher side but it exposes you to math which will be extremely useful if you decide to continue in HEP or Cosmology.
- Like most courses in the honors basket, it demands significant time commitment, not just for assignments but for understanding the content as well.

QM3

- Klein Gordon and Dirac equation, symmetry under the Lorentz Group, Noether's theorem, introduction to QFT.
- This course is quite difficult but it cover topics that are extremely important if you want to do research in HEP.
- Like most courses in the honors basket, it demands significant time commitment, not just for assignments but for understanding the content as well.

Group Theory Methods

- Introduction to Lie Groups and Lie Algebras, Dynkin diagrams, roots and root systems, pi systems.
- The course is math heavy but it isn't very tough. The concepts taught are extremely important from the point of view of research in HEP.
- The course requires moderate time commitment.

Why an honors is a good idea.

- An honors allows you to explore the field of your choice in greater depth.
- It gives you leeway in terms of course you can retag to increase your CPI.
- It allows you to take up more complicated research projects or move forward rapidly in the ones you are already doing as you get deeper knowledge about the field.

Thank you