

## Phys 508: HOMEWORK ASSIGNMENT No (3)

Friday February 15th 2016

**DUE DATE: Friday April 15th 2016.**

Assignments handed in late will not receive a full mark.

This assignment is the essay question that almost everyone requested.

Write a review essay paper which is addressed to other physicists, coming from any other field of theoretical physics (ie., theoretical condensed matter, particle physics, gravity/strings, quantum optics, astrophysics, etc), and who is at graduate level in physics like yourself. The essay should therefore be readable and explain a topic in a way which makes the subject understandable to readers from any one of these fields. A good guide here is the style of review articles in various areas of physics that appears in the journal "Nature" from time to time. Note that in such articles really technical stuff is relegated to a "Supplementary information" appendix, and also that you should give references. Figures can also be helpful.

The article should discuss some reasonably broad area which is related to the current course, and should (i) address some important and interesting features of this topic, and (ii) explain clearly how the theory works, what it can do, and how it can be applied in the real world. You should not use the article to just describe some calculations, although there is no reason why you can't, at various points in the article, discuss or describe calculations, giving an idea of how they work, in the general context of the article.

The article should be roughly 3,500 words in length, including references, and figures (this is about 6 pages of a Physical Review or Phys Rev Lett article); supplementary info should go on top of this.