

Welcome to the Physics portion of the Science Contest for the 2011-2012 year!

The structure of the Physics portion of the contest will be the same as used in the last few years, with the directed reading questions appearing first and then the remaining questions appearing in roughly standard textbook order. As always, I will strive to have problems on each contest that go from basic knowledge and/or simple calculations to more specialized knowledge and complex calculations. As we progress through the contest season the average level of difficulty of the questions on each contest will increase. I will utilize several different types of problems on the contests that will test for knowledge of definitions and concepts, as well as test for ability to perform calculations and symbolic manipulations. The quantity of these various types of questions will fluctuate on each contest and will be used to increase the level of difficulty of the contests throughout the season. Note: no formal knowledge of calculus will be required for the questions (although I reserve the right to ask graphical interpretation questions which illustrate basic calculus concepts and are found in the algebra based physics texts) and only simple ac circuits will be included on the contests.

This year the directed reading will be from the book “Beyond Einstein: The Cosmic Quest for the Theory of the Universe” Revised & Updated by Michio Kaku and Jennifer Thompson. The questions for each contest will be based on the chapters of the book as follows:

Invitational A:

- Chapter 1: Superstrings: A Theory of Everything
- Chapter 2: The Quest for Unification

Invitational B:

- Chapter 3: The Quantum Puzzle
- Chapter 4: The Riddle of Infinities

District 1:

- Chapter 5: The Top Quark
- Chapter 6: The Birth of Superstring Theory

District 2:

- Chapter 7: Symmetry: The Missing Link
- Chapter 8: Supersymmetry

Regional:

- Chapter 9: Before the Big Bang
- Chapter 10: The Mystery of Dark Matter
- Chapter 11: Cosmic Strings

State:

- Chapter 12: Journey to Another Dimension
- Chapter 13: Back to the Future
- Chapter 14: Beyond Einstein

Good luck with the studying and I hope to see you at the state meet this year.

Dr. James Friedrichsen