

## Physics 263: BTM Problem Set #18

These is the last problem set this quarter. *It counts as two problem sets.* Please ask questions! The problems are due by 5:30pm in the box in 1011 on Friday, June 2.

1. **BTM Problems 9.1.5 and 9.1.6.** Two examples exploring the idea of linear independence.
2. **BTM Problem 9.2.1.** Practice with orthonormal bases.
3. **BTM Problem 9.2.3.** Carrying out an example of the Gram-Schmidt procedure for generating an orthonormal basis.
4. **BTM Problems 9.5.2 and 9.5.3.** Finding eigenvalues and eigenvectors. *You are invited to do this problem entirely with MATLAB.*
5. Part III of 1094 Session 9 (available on the 263 web page under 1094 Sessions) steps you through how to access and use the arXiv e-print server. Go through that page and find the paper by Prof. Eric Braaten published in 2002 that has “condensate” in the title. For your answer to this problem, give the complete title of the paper, the full list of authors, and where the paper is published (i.e., the journal citation).
6. **BONUS: BTM Problems 9.5.4 and 9.5.5.** Good problems about the eigenvalues and eigenvectors of unitary and hermitian matrices.