Physics 3221
Fall Term 2018
Homework Problem Set 8

Due Friday November 9, 12:50 pm.

Reading: Chapter 6 and Prof. Alan Dorsey's handout on dimensional analysis linked to the course webpage. This homework has a total of 11 ⋆s.

Problem 1. Geodesics on a sphere. Problem **6.1**⋆ from the textbook.

Problem 2. Fermat's principle. Problem **6.5**⋆⋆ from the textbook.

Problem 3. Shortest path between two points on a sphere. Problem **6.16**⋆⋆ from the textbook.

Problem 4. Geodesics on a cone. Problem **6.17**⋆⋆ from the textbook.

Problem 5. Isochronous oscillations on a cycloid. Problem **6.25**⋆ ⋆ ⋆ from the textbook.

Problem 6. Dimensional analysis application. The speed of sound v in a gas might plausibly depend on the pressure P, the density ρ and the volume V of the gas. Use dimensional analysis to find v in terms of P, ρ and V.