Oberlin College Physics 111, Spring 2024

Assignment 8

Monday, 1 April

Reading: By Friday, read LSM chapter 15 ("Alternating-Current Circuits"). Deemphasize sections 15.4 and 15.6

Laboratory: "Solar Cell".

HOOT Sessions: Usually on Sunday and Tuesday, but for this week only they will be on Sunday, 31 March, and Monday, 1 April.

Guest Lecture: On Wednesday, 3 April, at 4:45 pm, Lydia Kisley will speak on "Science at the ultimate concentration limit — measuring one molecule at a time" in the Craig Lecture Hall. This will be a joint Physics and Chemistry lecture. If you attend the lecture and submit to me a one-paragraph description (on paper, on Friday, 5 April), you will be awarded 20 extra-credit problem-set points.

Eclipse: No class on Monday, 8 April. Instead, think about this puzzle:

When I stand on the Earth's surface, I see the Sun rise in the east and set in the west. I see the Moon rise in the east and set in the west. I see Venus, Mars, Jupiter, and Saturn rise in the east and set in the west. Everything goes from east to west. Yet the shadow of an eclipse sweeps across the Earth's surface generally from west to east. Why is the eclipse shadow different from everything else?

[*Clue:* From one sunrise to the next is about 24 hours. From one moonrise to the next is about $24 + (24/28) \approx 25$ hours (because the Moon goes from full to full in 28 days).]

Problems: Due Wednesday, 10 April.

- 58: *Induced electric field in a huge magnet*
- 60: *Inductors in series*
- 62: *Inductor in a circuit*