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Follow-up: Radiation, Antennas, and Einstein Relativity

1 message

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To: S14332s2-students@esp.mit.edu

Cc: Michael Albrecht <michaelgeraldalbrecht@gmail.com>, Christian Ferko <cferko@uchicago.edu>

Hi all,

Thanks for the excellent questions and productive discussion in the chat today, and I apologize for the technical issues with my audio quality. Despite the glitches I had a lot of fun.

I owe you some comments and resources.

1. The slides from the talk are available as a PDF [here](#), or on Overleaf [here](#).

I recorded a slightly longer version of the talk which goes a bit slower and includes all sections. The playlist is on YouTube [here](#), or you can view individual acts ([introduction](#), [act 1](#), [act 2](#), [interlude](#), [act 3](#), [epilogue](#)).

2. To get more intuition for divergence and curl, I highly recommend Grant's video [here](#).

3. A few remarks on textbooks:

- Most of the pretty figures in the slides (like the flux through the heart) are from a textbook by Halliday and Resnick, which is available in PDF form [here](#).

This is a good introductory book -- I think it's perfect for learning physics at the high school level, but it won't explain much about the mathematical framework like divergence and curl.

- The standard textbook for freshman electromagnetism (at MIT, UChicago, and elsewhere) is Purcell ([PDF here](#)). This is a beautiful textbook full of nice physical insights.

See Appendix H for a nice treatment of the radiation from an accelerated charge, including an argument for why it goes like $\frac{1}{r}$ rather than $\frac{1}{r^2}$ (an important fact which I did not have time to mention in the talk).

- Volume 2 of the Feynman lectures on physics is another classic undergrad-level book on electromagnetism. You can find it as a DJVU [here](#) (if you don't have a DJVU reader, you may need to [download one](#)).
- Finally, if you aren't already aware, you can find PDF or DJVU versions of almost any textbook for free on [libgen](#).

4. One person in the chat asked about my major at MIT, but it got lost in a sea of thank you messages. I studied course 8 (physics) and course 18 (math), and now I work on string theory at the University of Chicago. You can see some of my work [here](#).

If I forgot to answer any questions or include any resources that I mentioned in the talk, or if you have any questions about physics or colleges, feel free to email me at this address (cferko@alum.mit.edu).

Best,
Christian