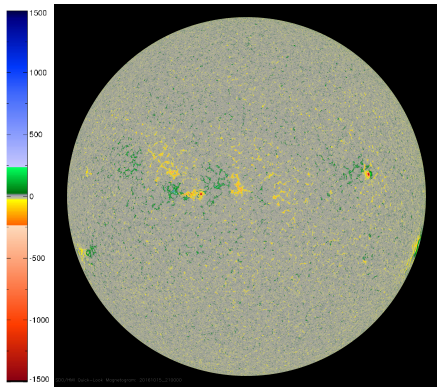
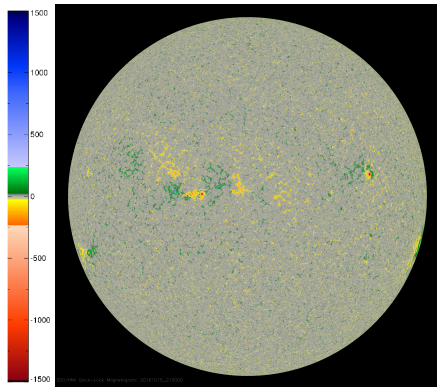


What Are You Looking at?

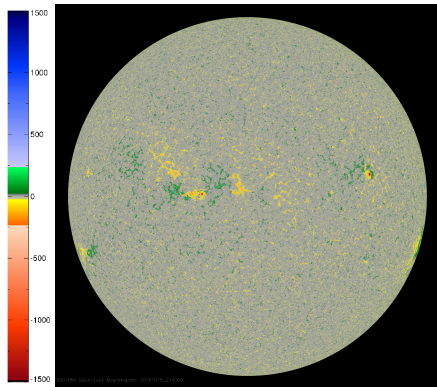


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① Hint: It makes [these](#) happen.

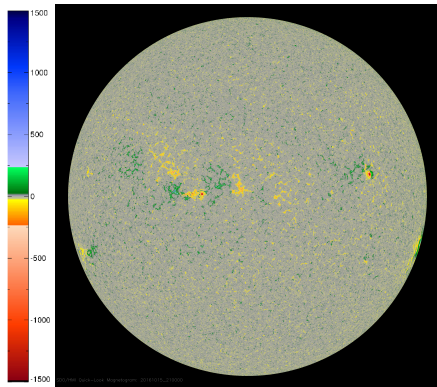


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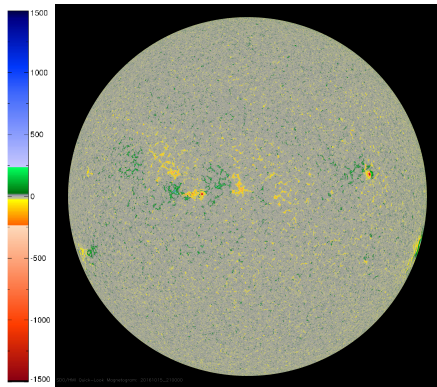
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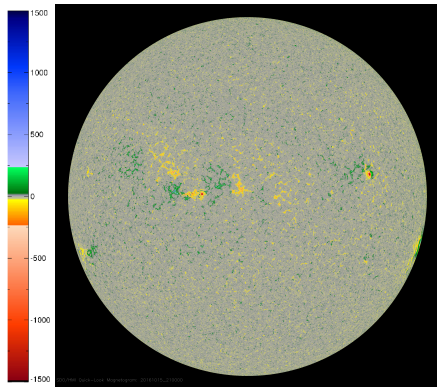
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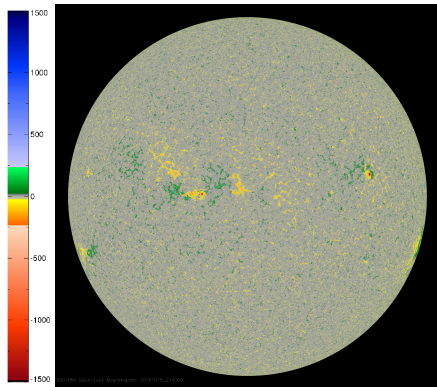
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- 6 Why should you care? Ask [him](#).

How Do We Measure the Magnetic Field on the Surface of the Sun?

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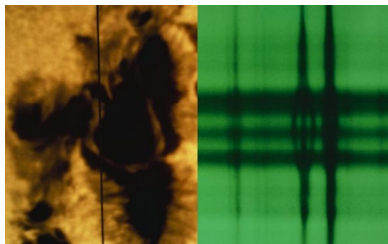
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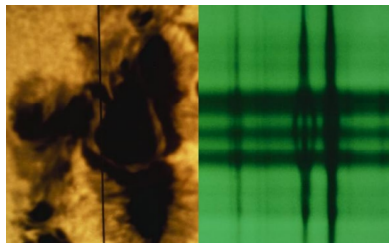
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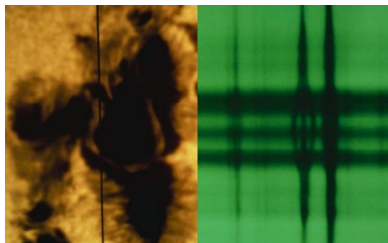
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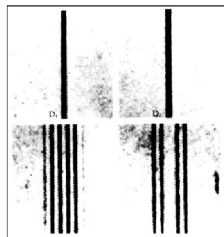
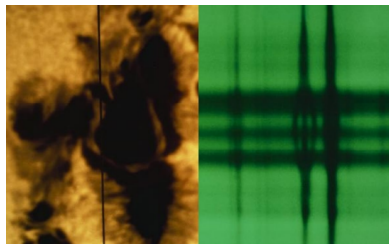
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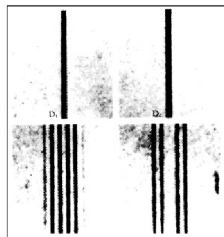
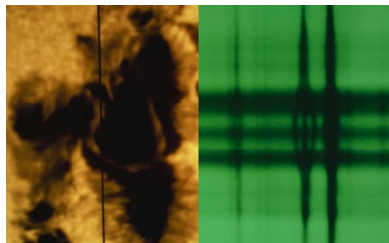
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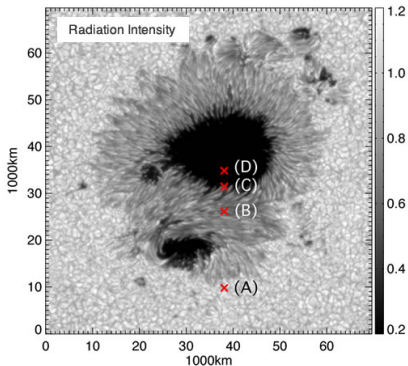
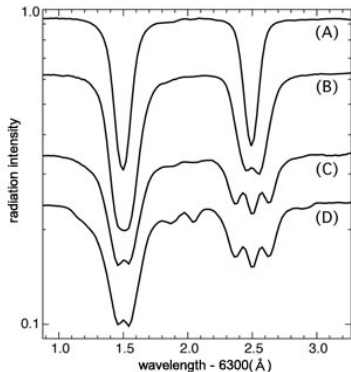
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The Zeeman Effect!

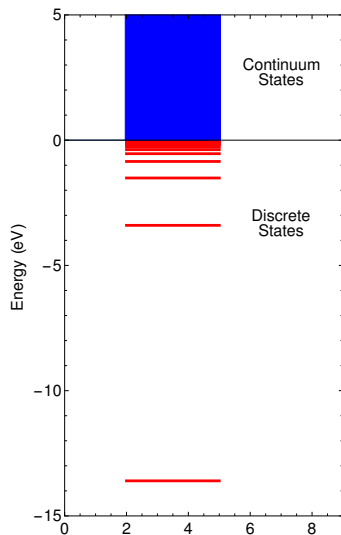
The Question

Left-hand plot below shows spectra of a sunspot. The labels from (A) to (D) correspond to the locations indicated in right-hand image. The single line (A) is split as the position shifts into the sunspot. The absorption lines at 6301.5 angstroms and 6302.5 angstroms are from iron. What is the size of the magnetic field that created the observed splitting?



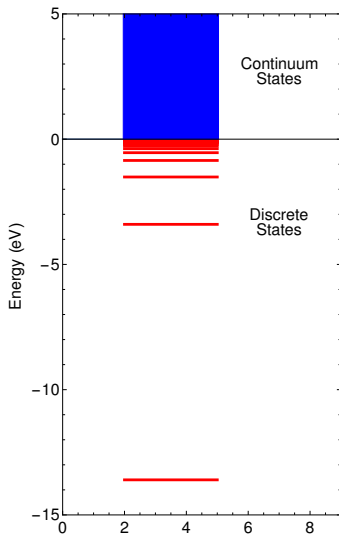
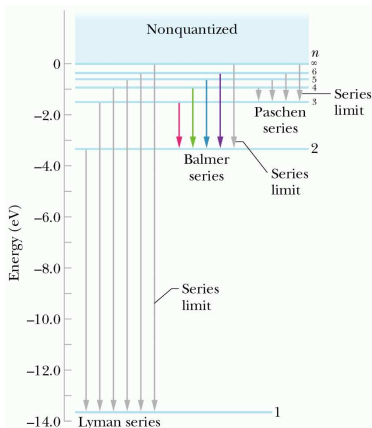
Hydrogen Eigenvalues (Energy Levels)

$$E_n = -\frac{\mu(e^2)^2}{2\hbar^2 n^2} = -\frac{13.6 \text{ eV}}{n^2}$$

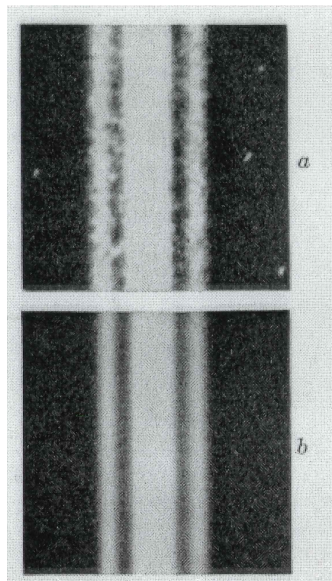


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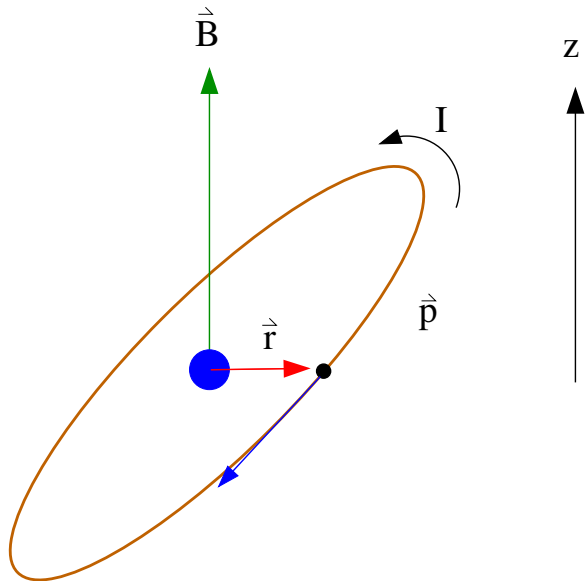
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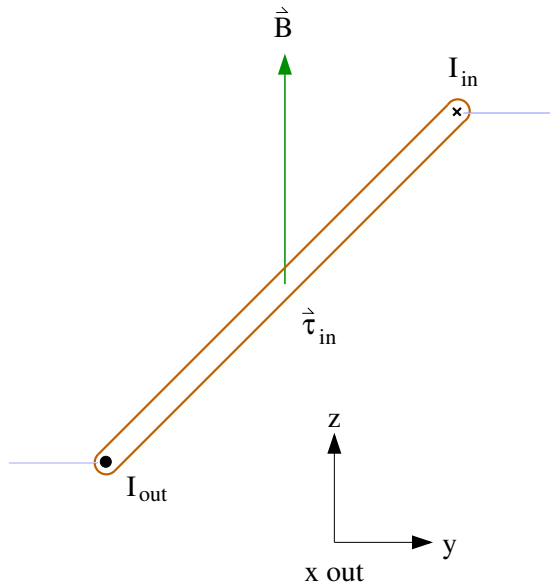
Zeeman Effect - H_{α} line in hydrogen



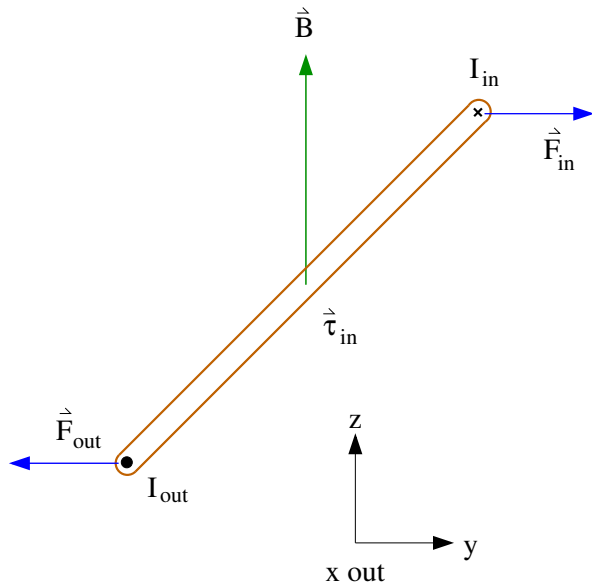
Current Loop in a Magnetic Field - 1



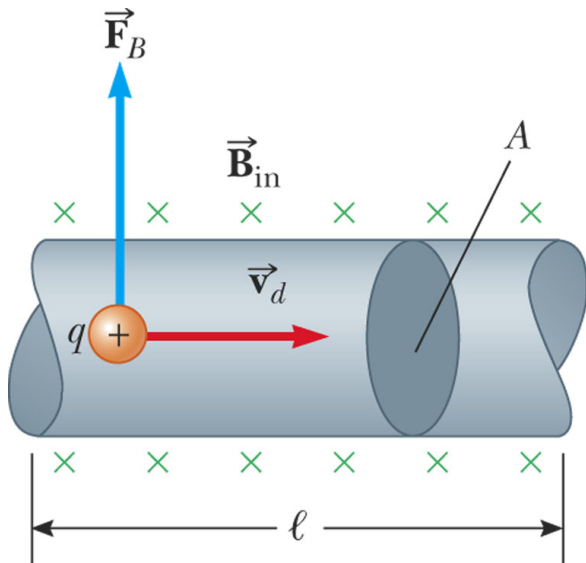
Current Loop in a Magnetic Field - 2



Current Loop in a Magnetic Field - 3

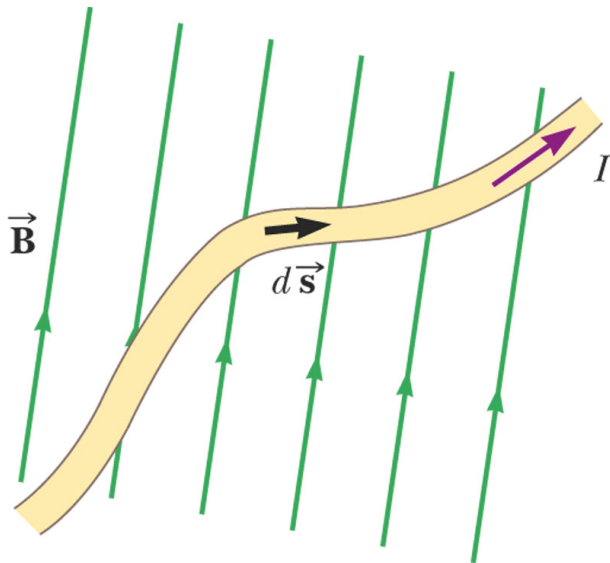


Current Loop in a Magnetic Field - 4



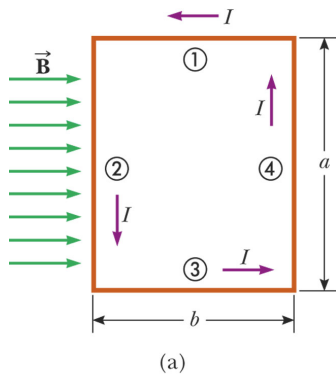
© 2006 Brooks/Cole - Thomson

Current Loop in a Magnetic Field - 5



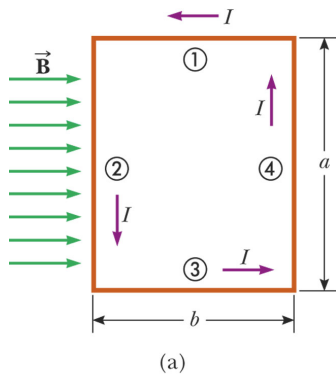
© 2006 Brooks/Cole - Thomson

Current Loop in a Magnetic Field - 6

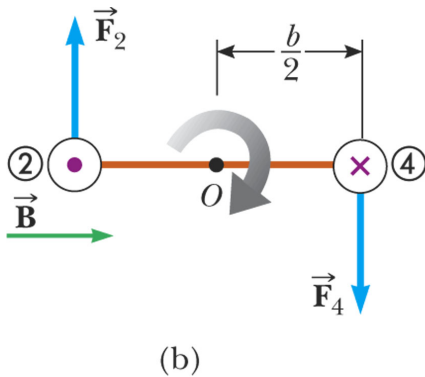


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Current Loop in a Magnetic Field - 6

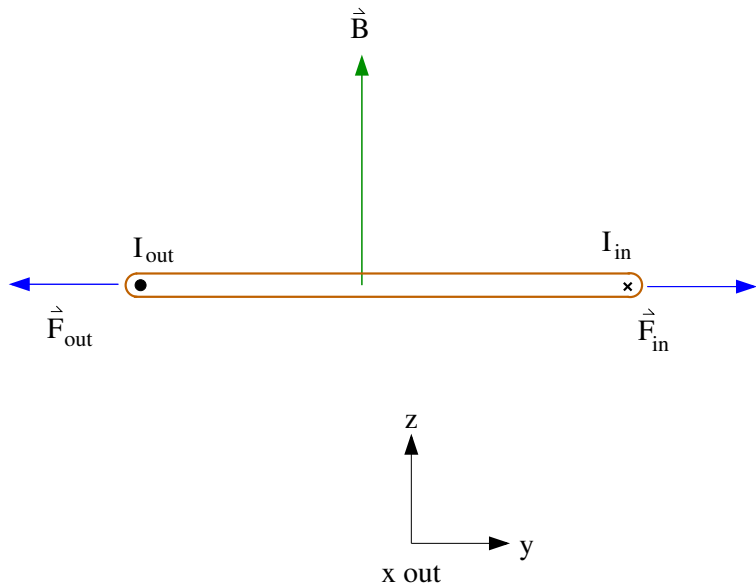


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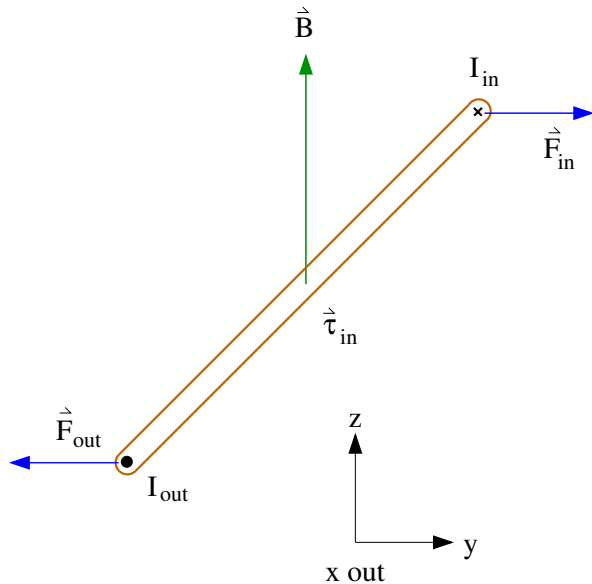


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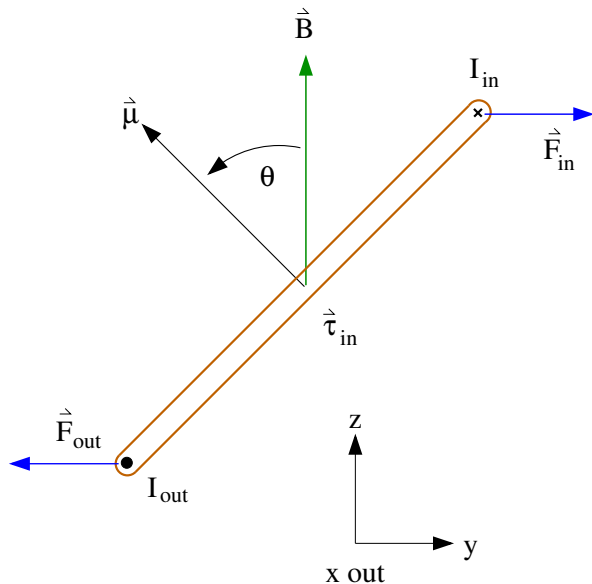
Current Loop in a Magnetic Field - 7



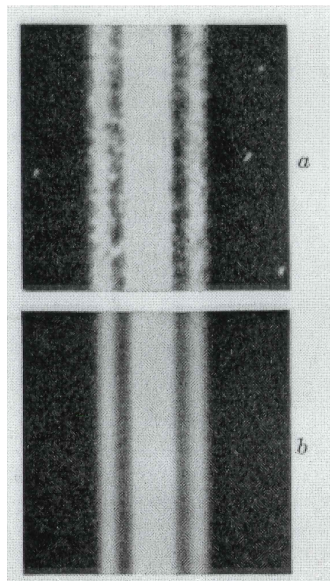
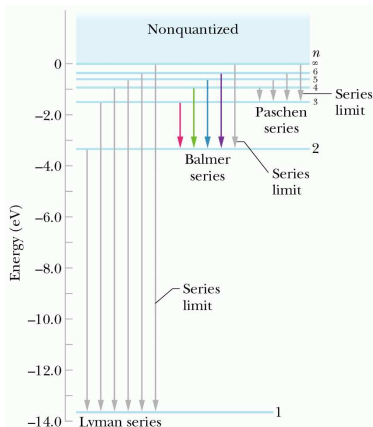
Current Loop in a Magnetic Field - 8



Current Loop in a Magnetic Field - 8



Test the Model - Zeeman Effect and H_{α} line in hydrogen



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