

ergy lies in a gap (PHYSICS TODAY, August 2003, page 38).

As an addition to their remarks, it is intriguing and suggestive that one can go beyond these facts and construct, for the quantum Hall effect, a mean-field theory that has the unique property of covering both the integer and fractional regimes in a single framework. In such a model, Hofstadter's butterfly (figure 5 in the article) maps out the essence of what is observed in the lab: the odd-denominator selection rule and hierarchy in the plateau widths and resolution.¹ The surprising unity of the effect results simply from the unity of the butterfly spectrum, with its self-similar features reflecting the hierarchies seen at very low temperatures.

As Douglas Hofstadter mentioned in his PhD thesis, his friend David Jennings, on seeing the spectrum, described it as "a picture of God."² Perhaps that is going too far, but one can certainly see this particular butterfly flying very high.

References

1. F. Claro, *Phys. Rev. B* **35**, 7980 (1987).
2. D. R. Hofstadter, "The Energy Levels of Bloch Electrons in a Magnetic Field," PhD thesis, U. of Oregon (1975), p. vii.

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Correction

December 2003, page 40—The Industrial Applications of Physics Prize, presented biennially by the American Institute of Physics, is sponsored by the General Motors Corp and AIP corporate associates. ■

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