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**Maria Chudnovsky** and **Paul Seymour\*** ([pds@math.princeton.edu](mailto:pds@math.princeton.edu)), Math Dept, Princeton University, Fine Hall, Washington Rd, Princeton, NJ 08544. *Perfect matchings in planar cubic graphs*. Preliminary report.

A well-known conjecture of Lovasz asserts that for every 2-edge-connected cubic graph  $G$  with  $n$  vertices, the number of perfect matchings in  $G$  is exponential in  $n$ . This seems to be wide open still, and as far as we know the best lower bound is  $n/2$ .

In this talk we sketch a proof of Lovasz' conjecture for PLANAR cubic graphs. In this case the problem is more tractable, because we can use the four-colour theorem as a source of 3-edge-colourings and hence of perfect matchings. (Received January 24, 2008)