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Pin Yu* (pinyu@math.princeton.edu). *On rigidity of charged black-holes, part 2.*

In these two talks, we discuss how to extend the recent works of Ionescu-Klainerman and Alexakis-Ionescu-Klainerman on the rigidity of vacuum black-hole solutions to the charged case. Here we examine the local rigidity of the bifurcate event horizon, and show how Hawking's rigidity theorem can be recovered in the smooth category if the space-time is assumed to be "close" to a Kerr-Newman solution in a suitable sense. If time permits, we'll also describe some other applications of this method to "perturbations" of the Kerr-Newman solution. (Received August 27, 2009)