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**Probing the neutral edge modes in transport across a point contact via thermal effects in the Read-Rezayi non-abelian quantum Hall states** EYTAN GROSFELD, University of Illinois, SOURIN DAS, Center for High Energy Physics, Indian Institute of Science, Bangalore, India — Non-abelian quantum Hall states are characterized by the existence of neutral gapless edge modes, whose structure is intricately related to the existence of bulk quasi-particle excitations obeying non-abelian statistics. Detecting the presence of these neutral modes is thus an important step towards establishing the non-abelian nature of these quantum Hall states. While it is hard to couple to the neutral modes using an electric field, they will directly couple to a temperature gradient and respond by contributing to the thermal current. By obtaining an expression for the thermal current through a quantum point contact, we demonstrate that a measurement of the thermal current will reveal the presence of the neutral modes. In addition, since thermal measurements are difficult to implement, we propose a setup which uses no external heaters and relies solely on noise measurements to detect thermal effects. The idea is to have two point contacts in series separated by a distance set by the thermal equilibration length of the charge mode. We show that by using the first point contact as a heating device, the excess charge noise measured at the second point contact carries a non-trivial signature of the presence of the neutral mode hence leading to its indirect detection.

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