Experimental constraints and a possible quantum Hall state at $\nu=5/2$\textsuperscript{1} DIMA FELDMAN, Brown Univ, GUANG YANG, RIKEN — Several topological orders have been proposed to explain the quantum Hall plateau at $\nu=5/2$. The observation of an upstream neutral mode on the sample edge [Bid et al., Nature (London) 466, 585 (2010)] supports the non-Abelian anti-Pfaffian state. On the other hand, the tunneling experiments [Radu et al., Science 320, 899 (2008); Lin et al., Phys. Rev. B 85, 165321 (2012); Baer et al., Phys. Rev. B 90, 075403 (2014)] favor the 331 state which exhibits no upstream modes. We find a topological order, compatible with the results of both types of experiments. That order allows both finite and zero spin polarizations. It is Abelian but its signatures in Aharonov-Bohm interferometry can be similar to those of the Pfaffian and anti-Pfaffian states.

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