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Detecting Majorana fermions in quasi-1D topological phases using non-local order parameters YASAMAN BAHRI, ASHVIN VISHWANATH, University of California, Berkeley — There has been much recent interest in realizing Majorana fermions in solid-state or cold atom systems. A primary goal has been to identify the topological phases which host them and propose routes towards their experimental detection. Such topological phases cannot be distinguished via local order parameters. Instead, we propose non-local string order parameters to distinguish 1D topological phases hosting Majorana zero modes. We also discuss potential cold atom measurements of string order, based on recent experimental developments, as a new and alternative route towards their detection. We further consider N identical chains of interacting fermions and use the group cohomology approach to construct non-local order parameters to distinguish topological phases of this quasi-1D system.

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