

Abstract Submitted  
for the DAMOP07 Meeting of  
The American Physical Society

Sorting Category: 5 (T)

**Distinguishability of a Tripartite Unextendible Product Basis using Local Operations and Classical Communication**<sup>1</sup> MICHAEL DUROCHER, BARRY C. SANDERS, University of Calgary, JONATHAN WALGATE, Perimeter Institute for Theoretical Physics — Quantum states must be distinguished every time we need to obtain information from a system. Here, we quantify multipartite state distinguishability with different measurement settings; this leads to important results in the case of an important tripartite system. Specifically, we analyze the smallest tripartite Unextendible Product Basis (UPB). This UPB has interesting symmetries and is not entangled, hence interesting here. Our work is an important step towards full quantitative analysis of local information available in locally indistinguishable sets of states. We consider the case in which the parties are restricted to Local Operations and Classical Communication (LOCC), which makes perfect distinguishability impossible in this situation. We also discuss our discovery of optimal (maximum extraction of information as given by the Shannon entropy decrease) protocols for distinguishing our UPB.

<sup>1</sup>This work has been supported by iCORE.

Prefer Oral Session  
 Prefer Poster Session

Michael Durocher  
mdurocher@qis.ucalgary.ca  
University of Calgary

Date submitted: 05 Feb 2007

Electronic form version 1.4