

Abstract for an Invited Paper  
for the DAMOP10 Meeting of  
The American Physical Society

### **Exploring Quantum Control Landscapes with Gun and Camera**

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Seeking effective controls over quantum phenomena entails a search over the control landscape. The landscape is defined as the observable objective as a function of the control, typically a shaped laser pulse. The topology and features of the quantum control landscapes greatly influences the quality of the achieved control and the efficiency of finding effective controls over quantum phenomena. Although the nature of an optimal control is highly system specific, surprisingly the landscape topology is generic for all quantum systems satisfying some basic assumptions. The background leading to the analysis of quantum control landscapes will be discussed, including relevant experimental and theoretical research. The broader physical consequences of these findings will also be considered.