

Abstract Submitted  
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**International Shipments of Sensitive Equipment for the LHCb Upstream Tracker**<sup>1</sup> JOSEPH SHUPPERD, Syracuse University, LHCb COLLABORATION — As a part of an international experimental collaboration, the shipment of delicate equipment is an unavoidable task. This requires consideration of both the specific demands of the equipment and the limitations of the shipping services. For the Upstream Tracker, part of the LHCb upgrade, there are major components that must be shipped between continents. The shipping procedures for these items have been carefully thought out and designed to ensure safe transport. Challenges include delicate exposed wire bonds that are susceptible to damage from both vibrational and environmental sources, mechanical structures that are not designed to withstand rough handling, and electric charge buildup on onboard electronics. This requires special transport containers to be built and techniques to be developed to ensure safe delivery. This talk will cover vibrational damping techniques, methods to combat varying environmental conditions, and electrostatic mitigation. Typical data from several international shipments will be shown from vibrational, temperature, humidity, and pressure monitors.

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