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Multipacting analysis of the SNS drift tube linac (DTL) RF vacuum window using Spark3d

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An ongoing study at the Spallation Neutron Source (SNS) seeks to better understand and address potential multipacting issues associated with the Drift Tube Linac (DTL) RF vacuum windows. An analysis of several failed operational windows showed indications of excessive RF heating on the TiN-coated alumina ceramics. Coupled with vacuum bursts and arcing during conditioning and/or operational periods, these problems have been attributed to electron activity likely caused by multipacting. The status of the study, 3-D electromagnetic simulation results, mitigating techniques and a future experimental plan for studying multipacting in the SNS DTL vacuum windows are presented.

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