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CEBAF and Advances in RF Superconductivity[1]

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The CEBAF accelerator at Jefferson Lab has completed 18 years of operation, supporting 172 nuclear physics experiments, 419 PhD's to date, 204 more in progress, and 289 Physics Letters and Physical Review Letters publications and 889 publications in other refereed journals at the end of FY 2010. CEBAF has far exceeded its original performance requirements and via its current 12 GeV Upgrade Project is poised for breakthrough research in the coming decades. Its cw operation and precision beam characteristics are made possible by exploitation of superconducting rf (SRF) accelerating technology. While commitment to 5 MV/m accelerating gradient was considered risky in 1986, the continued evolution of CEBAF has been made possible by sustained advances in SRF technology in the years since. The progression of CEBAF capability from initial construction into its 12 GeV era will be reviewed alongside the enabling SRF technical advances.

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