

Abstract Submitted  
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**Terahertz Coherent Synchrotron Radiation in the MIT-Bates South Hall Ring** FUHUA WANG, MIT Bates Linear Accelerator center, DAN CHEEVER, MANOUCHEHR FARKHONDEH, WILBUR FRANKLIN, WILLIAM GRAVES, ERNIE IHLOFF, RICHARD MILNER, CHRIS TSCHALAER, JAN VAN DER LAAN, DEFA WANG, DONG WANG, ABBI ZOLFAGHARI, TOWNSEND ZWART, LARRY CARR, BNL/NSLS, BORIS PODOBEDOV, FERNANDO SANNIBALE, LBNL, MIT BATES LINEAR ACCELERATOR CENTER TEAM, BNL/BSLS COLLABORATION, LBNL COLLABORATION — We investigate the terahertz coherent synchrotron radiation (CSR) potential of the South Hall Ring (SHR) at MIT-Bates Linear Accelerator Center. The SHR is equipped with a unique single cavity, 2.856 GHz RF system. The high RF frequency is advantageous for producing short bunch length and for having higher bunch current threshold to generate stable CSR. Combining with other techniques such as external pulse stacking cavity, femtosecond laser slicing, the potential for generating ultra-stable, high power, broadband terahertz CSR is very attractive. Our first research effort will be the operation of low momentum compaction ( $\alpha$ ) lattice and stable CSR radiation generation from the existing SHR. Initial tests of low  $\alpha$  manipulation and bunch length measurements are presented.

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