

**Recent Developments in Helios Compact Synchrotrons,**  
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Instruments; M. DYKES, M.W. POOLE, S.L. SMITH,  
V. SULLER, CLRC Daresbury Lab. - HELIOS is a  
compact synchrotron radiation source, comprising two  
180 degree, 4.5 T superconducting dipoles. The second  
machine, HELIOS 2, completed factory acceptance tests in  
September 1997 and is due to be shipped later this year to  
a new purpose-built synchrotron radiation facility at the  
National University of Singapore. HELIOS 1 has been  
operating routinely at IBM's Advanced Lithography  
Facility (ALF) in New York since January 1992. The two  
machines have the same magnetic lattice, but HELIOS 1  
employs a 500 MHz RF system (maximum 16 bunches)  
whereas HELIOS 2 uses a 55 MHz source (2 bunches).  
The performance of the two machines is described and  
compared. Both HELIOS 1 and 2 have stored over  
600 mA at full energy (700 MeV), and the HELIOS 1  
beam lifetime is now over 50 hours at 200 mA.