Operation Reliability of SSRF and upgrade plan at SSRF

Q.L.Sun,Q.L.Zhang,G.W.Jiao,S.J.Zhao, H.Liu,W.Z.Zhang, L. X. Yin
Shanghai Institute of Applied Physics, Shanghai 201204, P. R. China

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Abstract

The Shanghai Synchrotron Radiation Facility (SSRF), has opened to user for eight years, and the performance has been improved continuously to satisfy the users' needs. The operation performance and the reliability of SSRF have been kept in high level to provide users sufficient and stable synchrotron radiation laser. The report will focus on the operation performance of SSRF in last operation season, and the analysis of reliability is also shown in the poster. In addition, the upgrade program of SSRF accelerator, including superbend double-waist lattice, electronic power stabilization and Phase II beamline projects, will be shown in the poster too.

● Annual Operation Plan

Shut down during the summer and winter
Maintaining work for all systems
Upgrade on software and hardware are done by all systems
New IDs & Beamlines installations

● Every Week

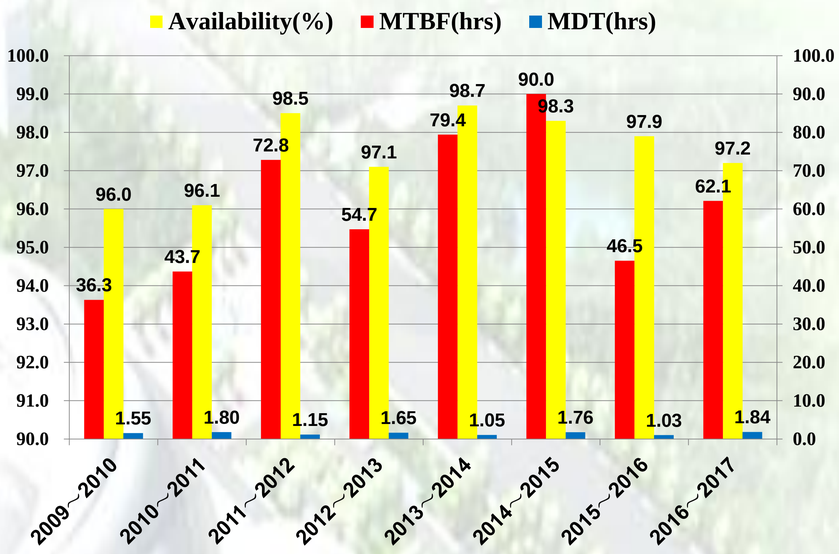
Regular operation meeting in every Monday, summarizing the work of last week & arranging current week, discussing the problems of the hardware and software

● Regular Maintenance

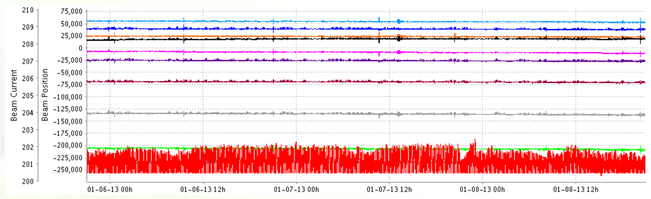
Every one or two weeks , we have one day for the maintenance from 9.AM to 5.PM.checking and maintaining and then warming up for the operation

● Communication

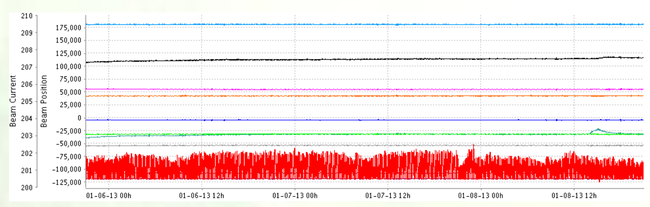
Using the Elog, WeChat and the remote desktop, Every staff can deal with the problem more efficient



Operation Performance of SSRF

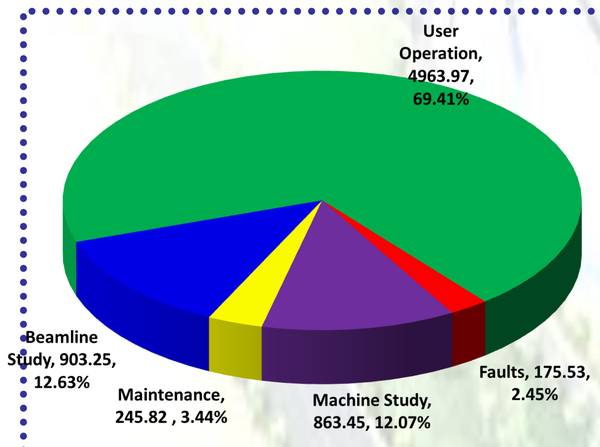


Horizontal

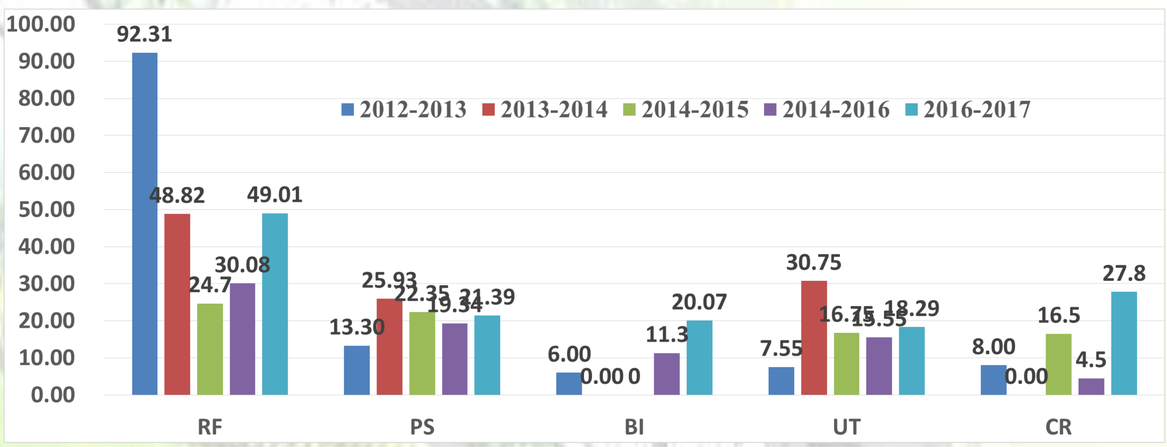


Vertica

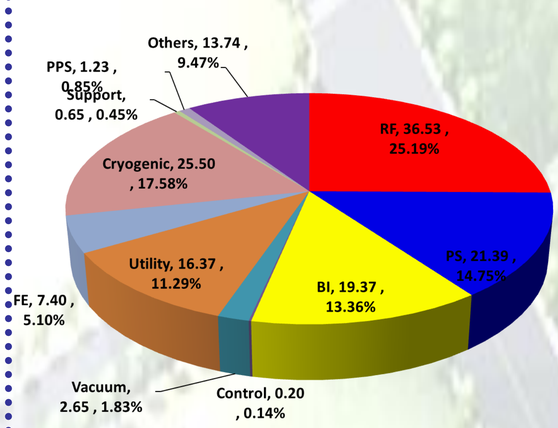
Orbit Status During User Operation



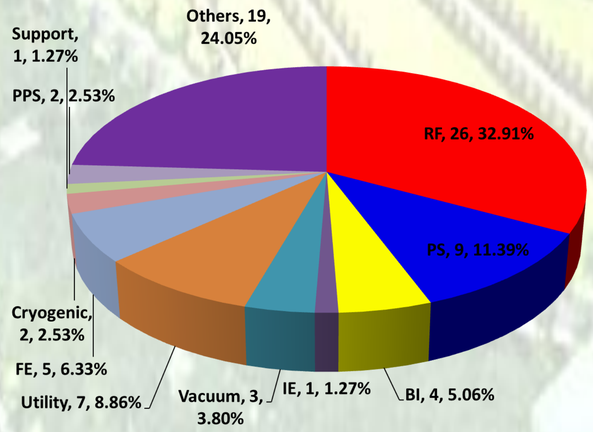
	2016.08-2017.07	2016.08-2016.12	2017.01-2017.07
Plan User Time	5109	1989	3120
User Time	4963.97	1916.43	3047.54
Faults	79	29	50
Faults Times	145.03	72.57	72.46
Availability(%)	**97.16**	96.35	97.68
MTBF（hrs)	**62.04**	63.88	59.76
MDT（hrs)	**1.84**	2.50	1.45



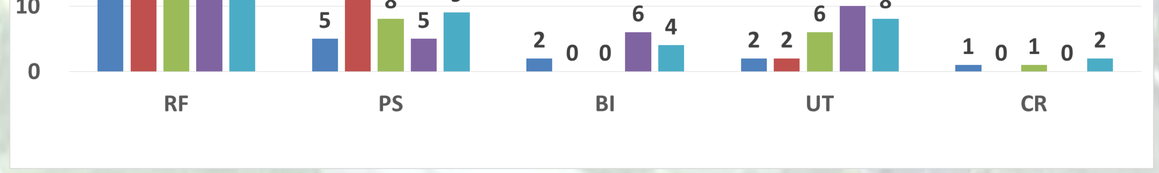
Accelerator Achievement



User Operation Achievement



Fault Times During the User Operation



Faults During the User Operation

●RF

The number & time of trip is still the most, but the recovery time ad level improve greatly

●Power Supply

Slow drift of Tune due to partial power supply had slightly influenced the operation .

●Utility

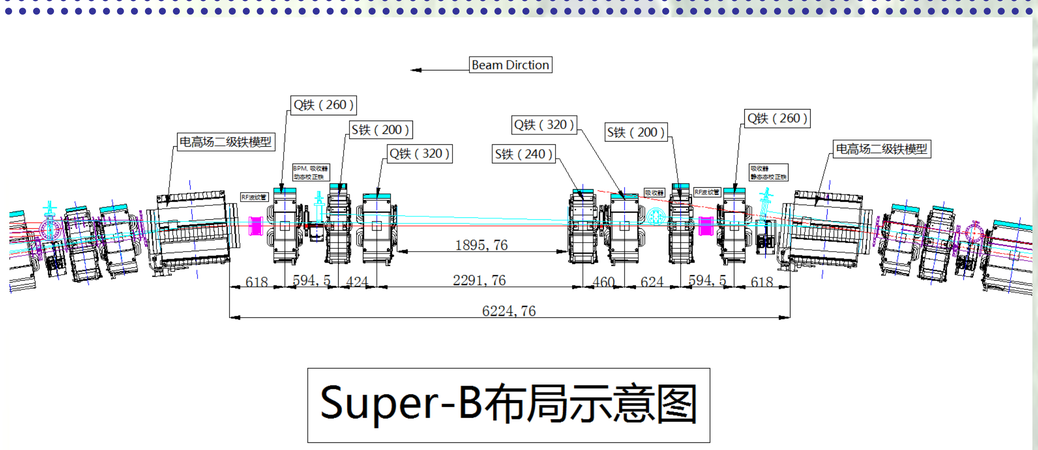
The impact of external power grid still exist

●Beam Instrumentation

The number and time of trip increased, the recovery time is longer.

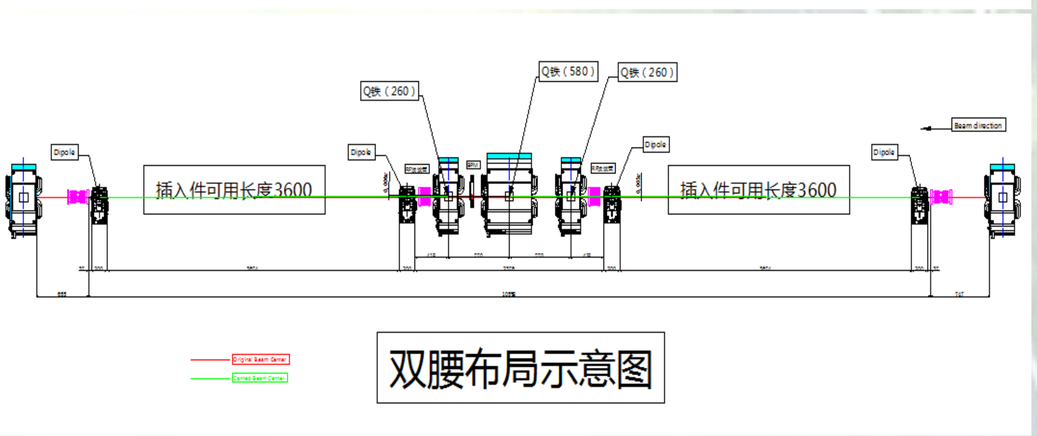
●Cryogenic

The time mainly concentrated in the recovery of RF Cavity



C03
C13

Super-B布局示意图



ID11
ID16

双腰布局示意图

Disciplines	Beamline	Science goals
Energy science	E-line	energy conversion and control
	D-Line	Structure of non-equilibrium systems
	Radioactive materials	Radioactive material
	Hard X-Ray Spectroscopy	Catalysis
Environ. Science	Hard X-ray Nanoprobe	Nano technology, cell, environ. components
	Medium-energy Spectroscopy	environmental pollutants
	3D Nano Imaging	nano imaging
Material Science	S2-resolved ARPES	magnetic and electronic properties
	Laue microdiffraction	local microstructure and defects
	Surface diffraction	microstructure of surfaces and interfaces
	Laser Electron Gamma Source	nuclear astrophysics/structure
Life Science	P2 Protein Crystallography	Moderate-risk infectious viruses
	Membrane Protein	Membrane protein
Industry Applications	Ultra Hard X-ray Applications	engineering materials and rocks
	Time-resolved USAXS	self-assembly and fiber-spinning
	Fast X-ray imaging	Fast process imaging

中国科学院上海应用物理研究所
Shanghai Institute of Applied Physics, Chinese Academy of Sciences