

# Machine Operation

The operational statistics since the inauguration are shown in Fig. 1. In 2001, the SPring-8 storage ring was operated in three- or four-week period for one operation cycle. The total operation time of accelerator complex was 5456.1 hours. About 74% of the operation time was available to users. The injection time and the down time due to failure accounted for 1.1% and 1.6% of the operation time, respectively. The remaining 23.4% was dedicated for: (i) the machine and beamline study, (ii) the machine and beamline tuning, (iii) the commissioning of new beamlines.

The operation modes of three different filling patterns were delivered to the user time; 37.8% in the multi-bunch mode, 38.9% in the several bunch mode such as 203-bunch mode (203 equally spaced bunches) and 84 equally spaced 4-bunch trains, and the remaining 23.3% in the hybrid filling mode such as a 1/12-partially filled multi-bunch with 10-isolated bunches. In 2001, several-bunch

mode has been on the increase. For the hybrid filling mode, 1 or 1.5 mA is stored in each isolated bunch. A purity of isolated bunch better than  $10^{-9}$  is routinely being delivered.

The operation schedule for the accelerator complex is usually fixed semiannually. These semiannual terms are referred to as the research terms for users, the first and second halves of which are denoted as xxxxA and xxxxB, respectively. In the first three years after the inauguration of SPring-8, the research term was defined on the basis of the Japanese fiscal year. From the year of 2000, however, the research term has been defined on a calendar year basis for the smooth scheduling with the Proposal Review Committee members.

In the past four years, the SPring-8 accelerator complex has experienced long-term shutdowns for two months in summer and one month in winter in order to install insertion devices and front-end components for new beamlines.

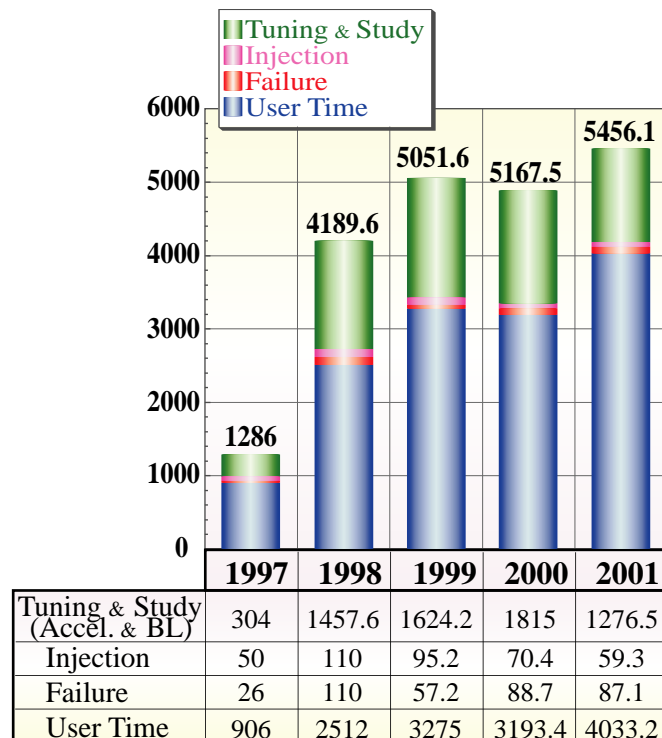


Fig. 1. Operational statistics since the inauguration.