



PROVISIONS FOR COLLIDING BEAM PHYSICS RUNS DURING NEXT
ISR RUNNING-IN PERIODS

ISR running-in activities have been scheduled from May 9th until July 11th in 3 three-week periods, corresponding to the regular periods of PS operation. The schedule is attached for information.

Provisions for colliding beam physics during this time were discussed in a meeting between Prof. Schopper, NP Division Leader, Dr. Sens, ISR Coordinator, and Prof. Johnsen, Dr. Bonaudi and the undersigned, for the ISR department, on May 12th.

Two main criteria were used in making a decision, based on the experience of the previous machine studies and physics runs:

1. A careful preparation of the stacks is essential in order to obtain beams with adequate lifetime and to reduce the background as much as possible. During last runs, these preparations were in fact started long before the time actually foreseen in the programme, and it is now clear that about two hours of machine time have to be set aside for beam preparation before each colliding beam run. In addition, luminosity measurements and optimization require comparable amounts of machine time. Finally, some extra ISR running-in time has to be devoted to experiments on beam gymnastic and scraping directed to study how to improve background conditions and flexibility of use for physics experimentation.
2. It is very important for efficiency in machine running-in work that a number of runs be entirely devoted to this work, so that tests on machine performance may be carried out without any restrictions resulting from the fear of spoiling the operating conditions for physics. It has been noticed on several occasions that hesitation to dump a "good" stack made at an early time seriously hampered machine experimentation.

In addition to the above criteria, the necessity of avoiding interference with installation work for future experiments and the limited availability of operating staff were taken into account.

It was observed that the sequence of runs in the second week of each period offers the opportunity for 2 eleven-hour runs for physics to be inserted between the machine experiments. The first of these runs, which comes after a 20-bunch run, can provide beams of the highest possible intensity, the second one is to be done with 4-bunch stacks, which are limited in intensity to about 1 A, but have particularly low background. It was agreed that another physics run will be scheduled during the third week of each period. This run will be limited to 7 hours during week 22, where it will be placed after run 58, in order not to interfere with installation work already planned. On the contrary, the runs which will follow runs 72 and 84 will last 12 hours.

Each physics run will be preceded by about 4 hours of machine running time, devoted partly to luminosity measurements and partly to beam preparation. In addition, it is foreseen to spend 6 more hours of running time on machine studies directly aimed at improving the experimental conditions.

The overall balance for the "regular" three-week periods turns out to be as follows:

- PS preparation for ISR	6 h
- ISR running-in studies	54 h
- ISR studies for experiments	6 h
- Beam preparations and luminosity measurements	12 h
- Colliding beam runs for physics	34 h

During the colliding beam runs, the beams will be kept circulating continuously, since no refill would be possible. It is also planned to avoid beam manipulations during this time, both because of the lack of experienced staff and because of the unpredictable effects of beam perturbations on background. All necessary adjustments should, therefore, take place during the beam preparation time.

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Scheduled : ISR- Runs

	SU	MO	Tue	We	TH	FR	SA	Week
MAY							1	18
Run N°								
4b								
20b								
	2	3	4	5	6	7	8	19
Run N°					49 50			
4b					10 16			
20b				15 GeV	16 22			
	9	10	11	12	13	14	15	20
Run N°								
4b								
20b								
	16	17	18	19	20	21	22	21
Run N°		51 52	52' 53 54	54' 55 56				3 week period
4b			10 17 23	10 16 23				
20b		15 GeV	26 GeV	22 GeV				
	23	24	25	26	27	28	29	22
Run N°		57 58	58'	59 60		61 62		
4b		10 16		10 16		10 17 23		
20b		22 GeV	16 23	15 GeV	16 23			
JUNE	30	31	1	2	3	4	5	23
Run N°								
4b								
20b								
	6	7	8	9	10	11	12	24
Run N°		63 64	64' 65 66 66'	67 68				3 week period
4b		10 16	10 17 23	10 16				
20b		15 GeV	15 GeV	16 23				
	13	14	15	16	17	18	19	25
Run N°		69 70		71 72	72'	73 74		
4b		10 16		10 16				
20b		16 23		16 23	11	10 17 23		

1971
Week

SU MO Tue We TH FR SA

	20	21	22	23	24	25	26
Run N°							
4b							
20b							
JULY	27	28	29	30	1	2	3
Run N°		75 76	76 77 78	78 79 80			
4b		10 16	10 17 23	10 16			
20b		15 Gen 16 23	15 Gen	16 23			
	4	5	6	7	8	9	10
Run N°		81 82		83 84 84'	85 86		
4b		10 16		10 16			
20b		16 23		16 23 11	10 17 23		

26 ↑

27
3 Week
period

28

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