ISAC Operations Note

Title: 17O3+ DRAGON run

Date: May 23, 2009

Author: Marchetto Marco

DRAGON will request many small energy changes for the 17O run. The energies range from 250 keV/u to 600 keV/u. The starting enrgy is 474 keV/u (tank3 energy). We are also running one of the HEBT buncher (11 MHz for energy lower than 500 keV/u, the 35 MHz for energy higher than 500 keV/u)

The procedure for energy changes is the following:
1 - turn off the HEBT buncher in use;
2 - turn off DTL buncher3;
3 - fiddle save the HEBT optics 1 page then change the HEBT:Q6, HEBT:Q7 and HEBT:Q8 to the PRAGUE optics (see the ISAC I OPEN office spreadsheet);
4 - get the field of the PRAGUE magnet for the request energy from the OPEN office;
5 - set the energy with DTL tank3 as follow: set first the amplitude then check the phase in; order to have maximum acceleration (remember that when the beam moves toward the left side of the PRAGUE harp is accelerating meaning higher energy). After you check the phase you have to readjust the amplitude;
6 - set the DTL buncher3 (as pure buncher) : first the phase for no acceleration (remember that there are two phases that give no acceleration , the correct one is when the beam moves accordingly to the phase slider) then set the amplitude in order to minimized the energy spread;
7- if the energy is lower than the minimum energy of tank3 you have to set the energy with DTL buncher2 just changing the amplitude (leave the phase at the original setting, see saved tune); no other DTL downstream cavities (tank or buncher) are required;
8- if the energy is lower than the minimum energy of buncher2 the you need to set the energy with DTL tank2 and then tune DTL buncher2 as a pure buncher (as you did in step 5 and 6 for tank3 and buncher3);

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9 - restore the HEBT optics page 1 with the fiddle ;
10 - rescale the optics downstream the DTL up to DRAGON for the new energy;
11 - DTL quads may need to be lowered to restore transmission at HEBT:FC5;
12 - send the beam to DRAGON and wait: they have to check the energy and center the beam on DRA:XSLITC closed down to 1 mm
11 - once they finished the will ask to set the HEBT buncher, you have to decide which one base on the new energy (the 35MHz buncher has to be turned on around 150 , the 11 MHz can be turned on at any value)
12 - set the buncher phase in order to have the beam centered again on DRA:XSLITC; you should find two phases which center the beam, choose the one that gives maximum current on DRA:FCCH cup. Set the buncher amplitude in order to maximize the beam current at DRA:FCCH.
13- Deliver beam to DRAGON.

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