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Coping with the future top up mode of operation at ESRF

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In 2016 the ESRF storage ring will be operated in top up mode in order to suppress the temperature drift in the beam lines due to the beam current decay. The benefit coming from this improved beam current stability must not be spoiled by the degradation of others beam parameters caused by the frequent injections required by this new mode of operation.

In order to deal with this issue, we are trying to develop systems aiming at:

- 1- Reducing the orbit perturbation and the parasitic betatron oscillation caused by operation of the pused magnets (kickers and septum) of the injection system. These perturbations are not an issue when the injection is performed every 6 hours but are not acceptable when the injection occurs every few minutes.
- 2- Avoiding the injection of electrons in the buckets of the storage ring which should be left empty according to the filling patterns of the ring defined for the time structured mode of operation of the storage ring. Presently, we perform a cleaning sequence on the SR beam after each injection, but this scheme will not be possible anymore in the top up mode.

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