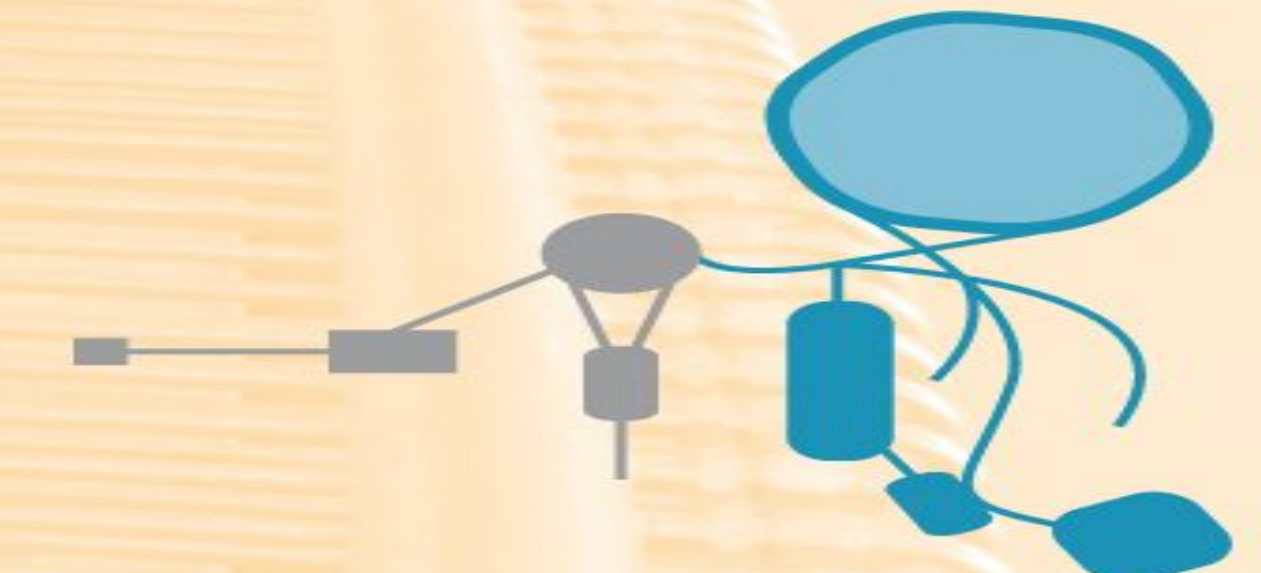


Bunch to Bucket Transfer System for FAIR

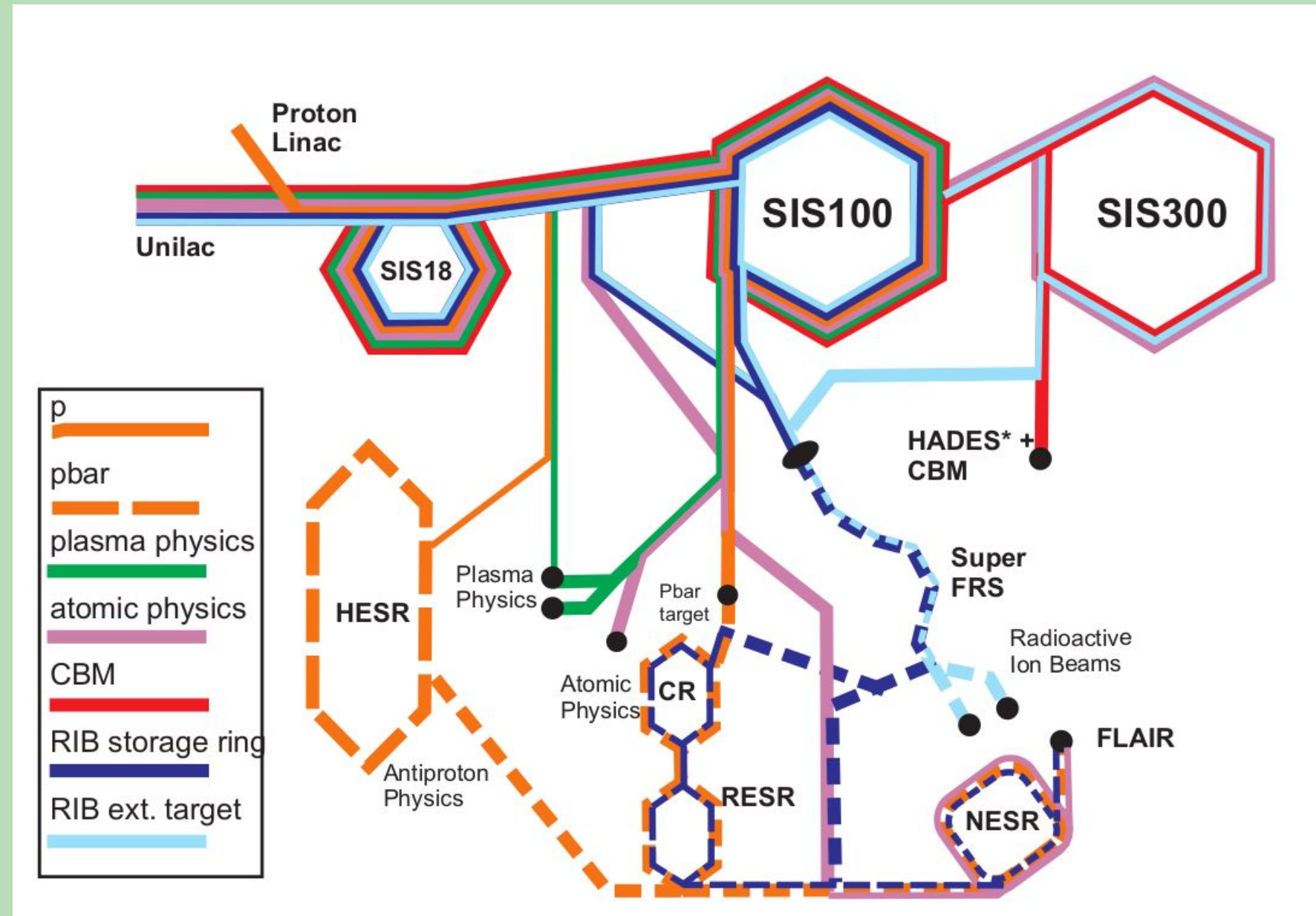
J. Bai^{1,2}, T. Ferrand¹³, R. Bär¹, D. Beck¹, O. Kester¹², D. Ondreka¹, C. Prados¹, W. Terpstra¹

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 3 Technical University Darmstadt, Darmstadt, Germany

FAIR



B2B Transfer System



For FAIR, there are many transfers involving the B2B transfer

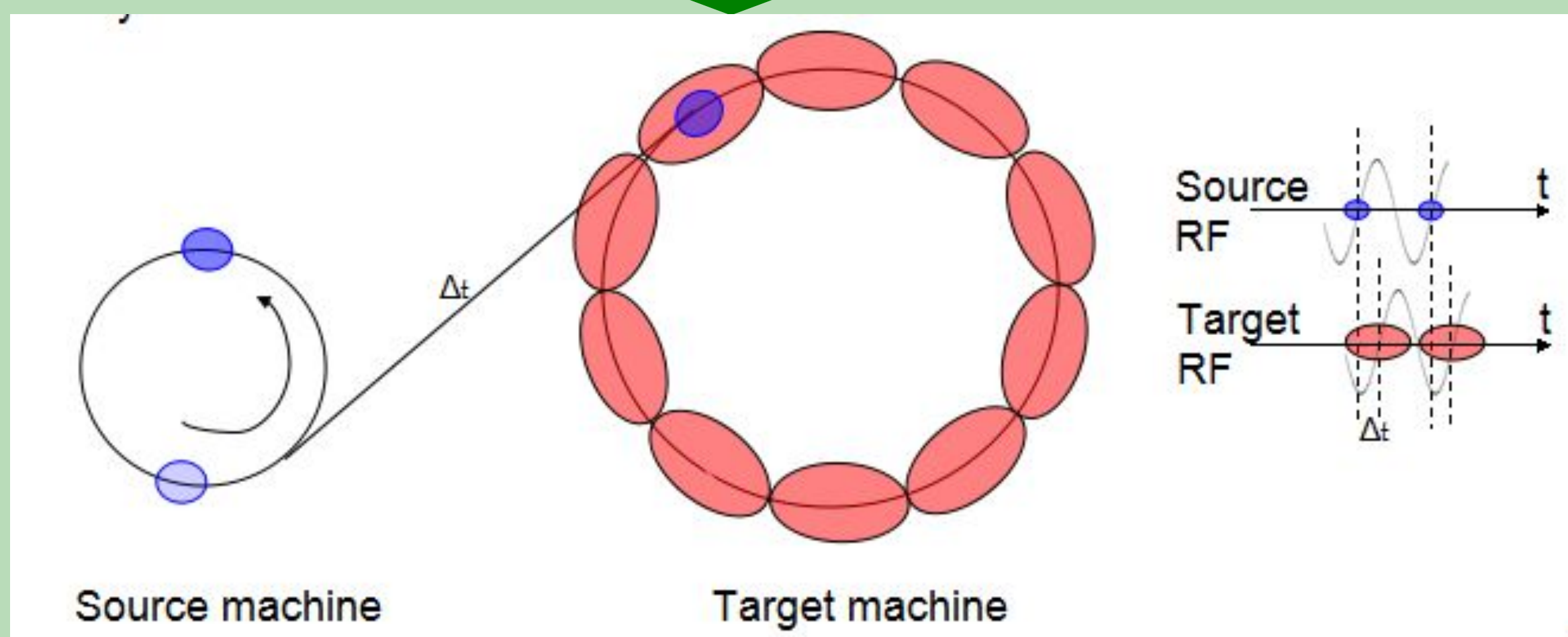
- From the SIS18 to the SIS100
- From the SIS18 to the ESR
- From the SIS100 to the CR
- From the CR to the HESR and later to RESR

Bucket: Stable phase space area where beam may be captured and accelerated => stationary bucket

Bunch: A group of particles captured in a phase space bucket

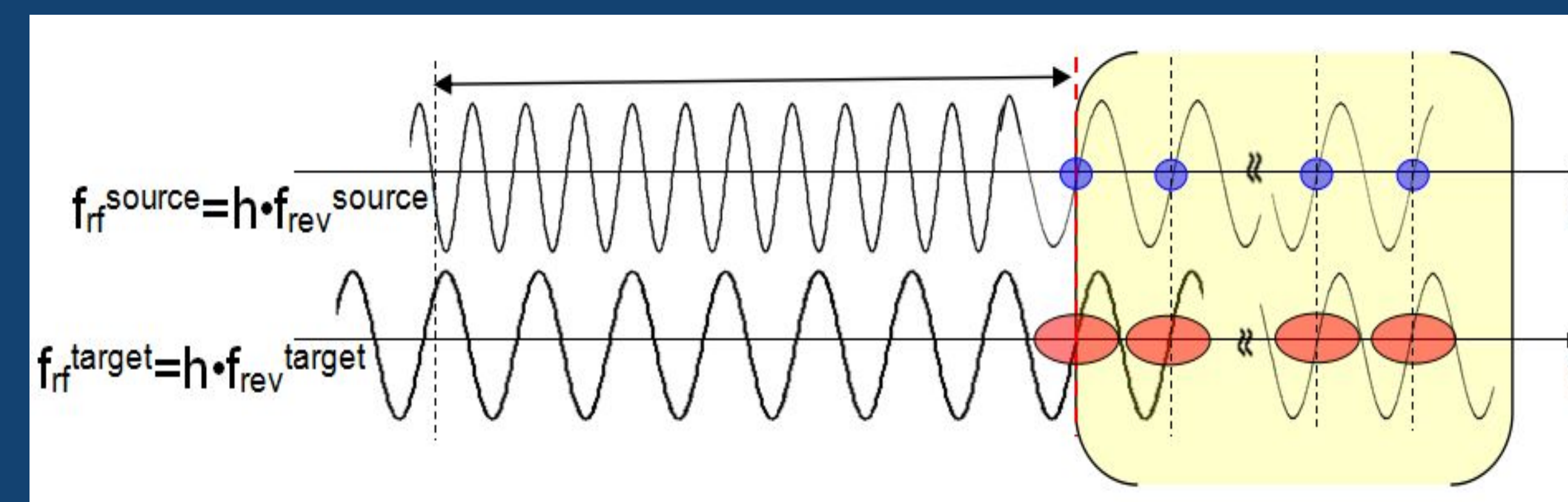
« Bunch-to-Bucket transfer »

One bunch, circulating inside the source synchrotron, is transferred into the center of a bucket of the target synchrotron.

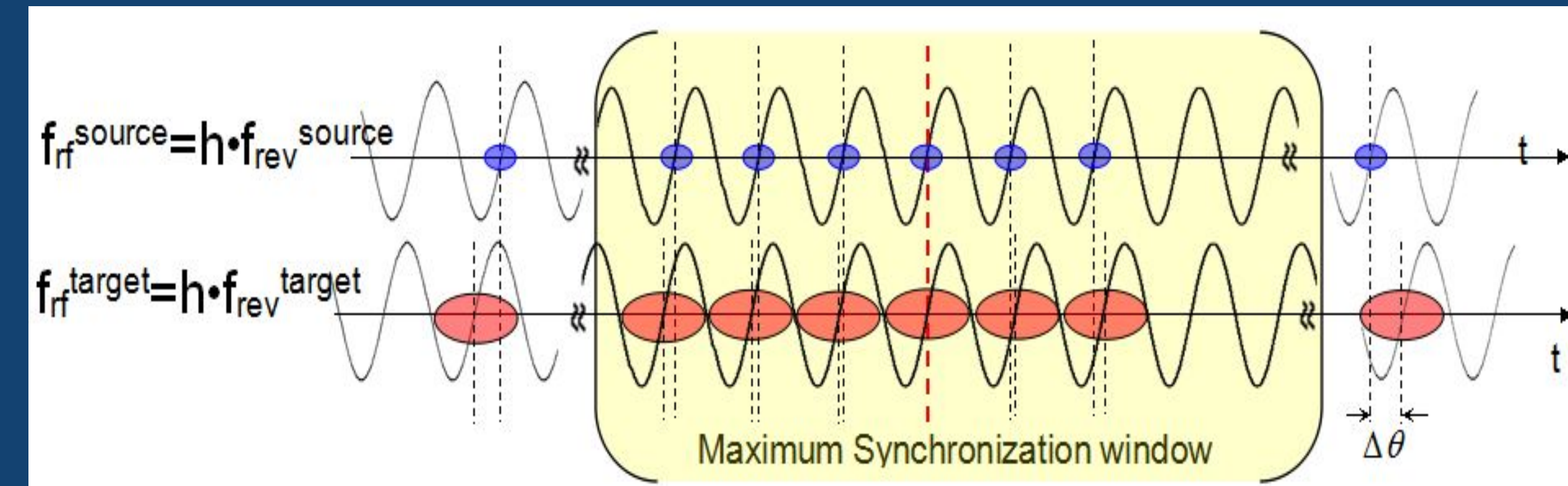


Methods of Synchronization Two Synchrotrons

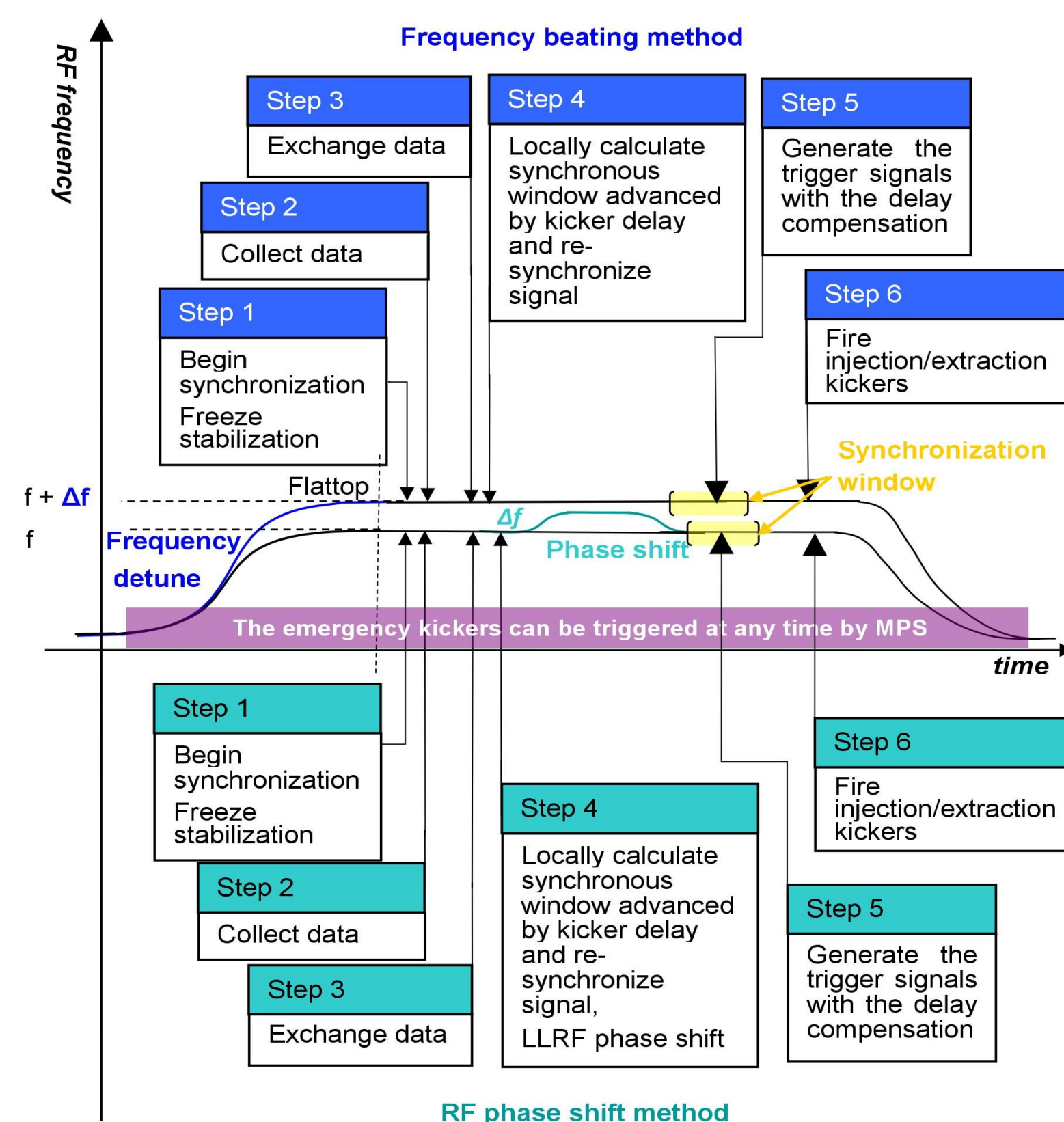
Phase shift method



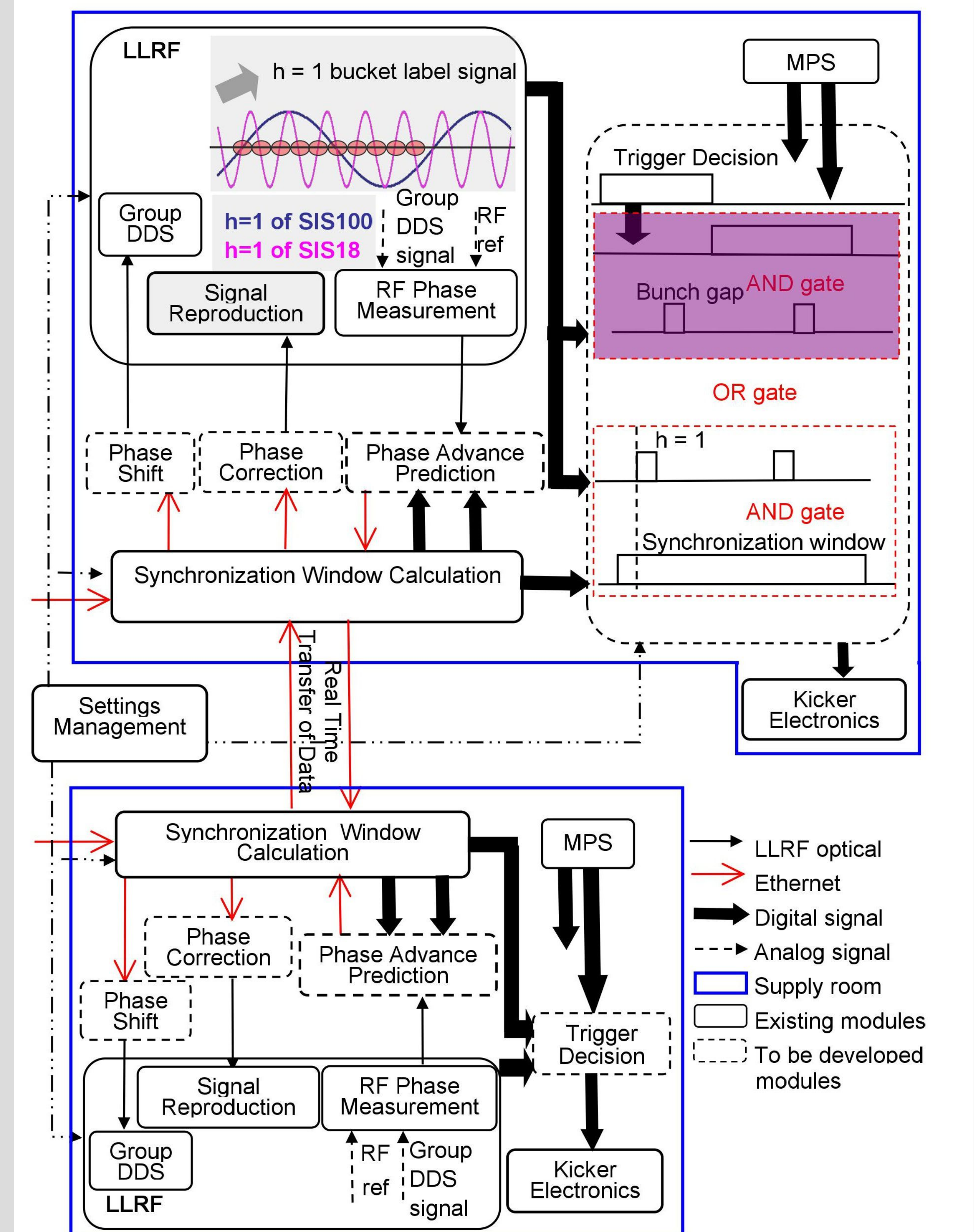
Frequency beating method



Standard Procedures for the B2B Transfer System



Functional blocks for the B2B Transfer System



- RF Phase Measurement Module
- Phase Advance Prediction Module
- Synchronization Window Calculation Module
- Phase Correction Module
- Signal Reproduction Module

- Phase Shift Module
- Group DDS Module
- Real Time Data Transfer
- Trigger Decision Module
- Kicker Electronics Module