Resource allocation for Hot zone operation
(Control and Traffic channel configuration for femtocell BSs and Hotzone BS)

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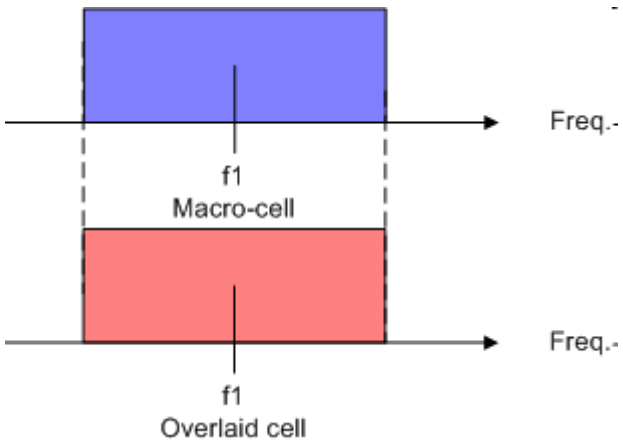
Venue:
TGm SDD: Femtocells

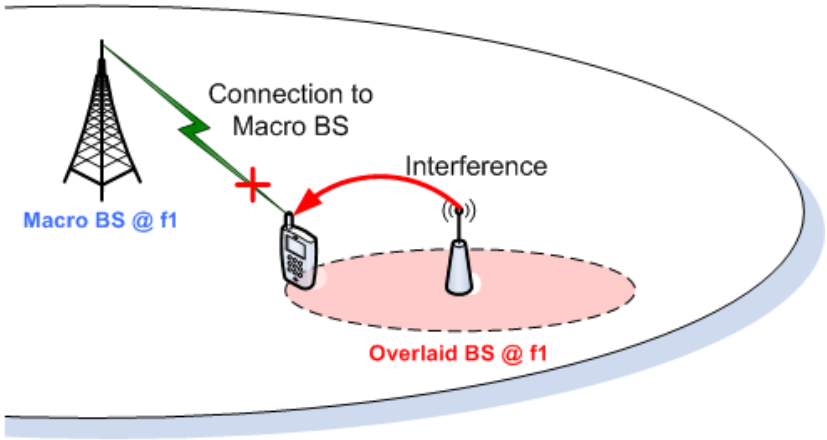
Base Contribution:

Purpose:
Discuss and adopt the proposed text for SDD

Motivations (1/2)

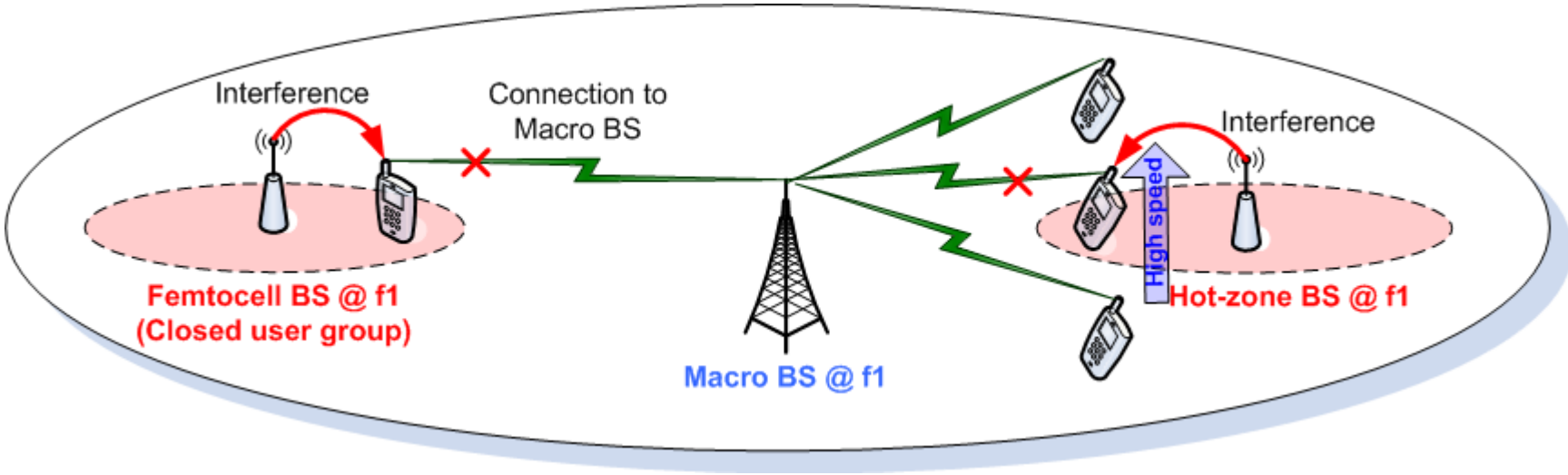
- Overlaid cell blocks signal reception from Macro BS
  - Overlaid cells is interference source to Macro BS coverage
    - The same spectrum may be used for the cells
- Overlaid cells are inevitable
  - Femtocell BSs in other cell coverage
  - Hotzone BSs in macro coverage
    - Installed outside to support heavy traffic in spots within macro coverage
    - Allowing public access to increases system capacity
    - A open access femtocell BS installed outside is a good example





Motivation 1/2

- Service discontinuity to MSs in overlaid cell coverage
  - A MS in non-allowed CUG[1)] femto cell BS
    - The MS can't make handover to the femtocell BS
  - A high speed MS in Hot zone coverage
    - Dwelling time at Hot zone may not be long enough to make HO
- Need to keep connection between macro BS and the MSs



1) CUG: Closed User Group

Proposed scheme

- Overlaid BSs reserve resources for MSs connected to Macro BS
  - Overlaid BS does not transmit signal in the reserved resource
  - Macro BS allocate the reserved resource to the MSs
- Fast detection of such BSs would be greatly helpful to manage interference

- Closed User Group (CUG) Femtocell BS
  - MS detects non-allowed CUG femtocell BS
  - MS requests the serving BS to allocate the reserved resource if needed

- Hot zone BS
  - Tow solutions
    - HO to hotzone BS
    - Use reserved resource to be connected to macro BS
  - Two schemes are used in hybrid manner depending conditions
    - MS detects Hot zone
    - MS decides whether it makes HO to Hot zone or keeps connection to BS
      - HO to hot zone: Normal HO procedure
      - Keeping connection to BS
        - Hot zone reserves resources
        - MS signals BS to allocate the reserved resources
        - BS allocates the reserved resources to the MS

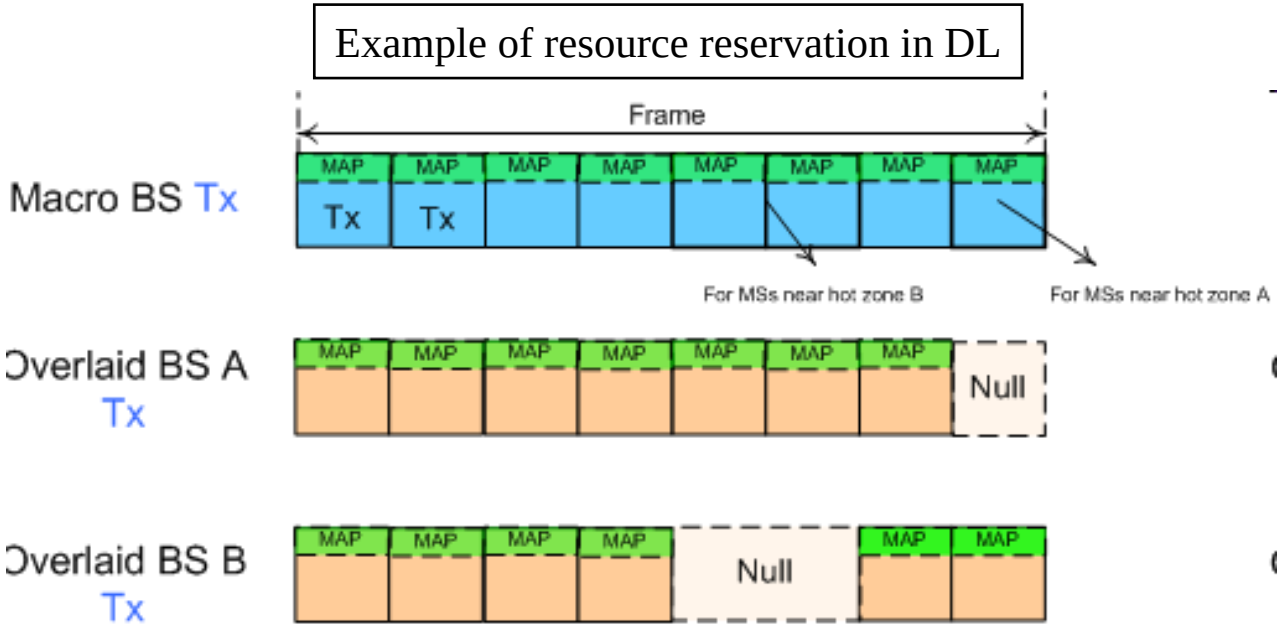
Fast detection of cells

- Fast detection of Hot zone and CUG femto BS
  - Before interfering severely each other
  - Critical when MS's velocity is high

- Physical layer identifier is needed
  - MS's short dwelling time at such BSs coverage
    - Possibly around 1 second when MS's speed is high
    - Short enough for HO long enough for service interruption
  - S-SCH provides S different groups of S-SCH sequences to identify different groups of cells in PHY level.
    - One group belongs to a hotzone BSs

Example of reserved resources

- Overlaid BS reserves subframes in DL
  - It provides reliable reception of MAP and traffic from Macro BS
- Overlaid BS reserves resource in FDM manner in UL
  - It provides coverage in edge users



Proposed text

[Insert the following text]

17.x PHY level cell identifier

S-SCH provides N different S-SCH sequences to identify different cells in PHY level. Different S-SCH sequences are grouped to groups. A S-SCH sequence in a group is assigned to a specific cell type: Macro cells, Hotzone cells, or Femto cells. It enables MSs to identify cells in PHY level and makes efficient network access. A S-SCH group can be further sub-grouped to identify whether the BS is closed user group or non-closed user group Femtocell BS.

17.y Support of overlaid BS

A overlaid BS can reserve resource in cooperation with macro BS where the overlaid BS is overlaid. The reserved resource can be used to keep the connection between a MS in the overlaid BS cell coverage and the macro BS. MS can report macro BS to allocate the reserved resource of the overlaid BS.