# March 20, 2025

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- Recent progress
  - BG study on November 15
    - Measured BG rates from TOP and ECL are much higher than April with factors of 1.8 and 2 respectively. We also observed unexpected background correlation with changing horizontal tune during beam decay.
    - SAD simulation using the optics of the study day
      - Showed lower IR loss rates for both Touschek and Beam-gas compared to the April study
      - Got consistent results with another optics file on November 14, which was just after optics correction. Therefore, the lower IR loss in SAD simulation, which is inconsistent with TOP and ECL data, is not caused by the optics file.
    - Have collected inputs from all detector experts and tried to fit data with heuristic formulae
      - Fit quality is not as good as in April and could be very bad for some detectors. This might be related to the tune shift during beam decay
    - Have generated templates for ECL trigger rates
      - Templates shapes are consistent with the April ones. The main difference is that the averaged trigger rates in November study are lower.
- Plans for the next two weeks
  - Update on BG studies in 2024 at the next BG group meeting and the TB meeting
    - Summarize 2024 BG studies and improve the heuristic fit for the November study
    - Use new templates for ECL online monitor to analyze 2024 backgrounds
  - After the meetings next week
    - Model the measured pressure as a function of beam current
    - Consider both horizontal and vertical tune in heuristic formulae
- Questions and discussion
  - Tune shift can affect both Touschek and Beam-gas even without direct resonance excitation. (Hints from Gemini@google)
    - Impact on Touschek: Beam Distribution Changes, Momentum Acceptance and Chromatic effects interaction
    - Impact on Beam-gas: Orbit Distortions, Beta Function Changes and Dynamic Aperture Reduction
  - Very challenging to include tune in the fit. Hope the template fit could bring some more hints. Maybe the operation point and the optics used in November study are not at an ideal state, so that the machine was unstable and even small tune shift could affect particle loss rates.