# LCLS-II Timing Pattern Generator Configuration GUIs

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# Project Goal

- Timing Pattern Generator (TPG) Configuration GUIs:
  - New Timing Pattern Generator Display

Requirements: Configure complex bunch patterns and multiple beam destinations

Customizations: Parameterized configurations, Manual bunch entry, Pre-configured sequence selection

  - Allow Table Display

Requirements: Receives Power Limits from MPS, selects beam patterns that meets Power Class limitation, MPS verifies selected beam patterns still match the Power Class

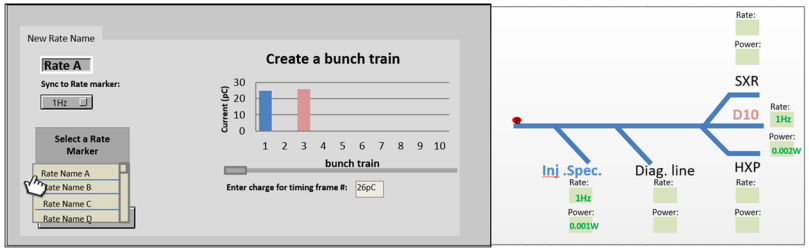
  - Actual Rates Display

Requirements: Indicates if MPS is enforcing a lower rate than the requested beam rate.

# Solution outline

- Timing Pattern Generator Configuration GUIs:
  - Timing Pattern Generator Display

**Early Injection Commissioning**


  - Allow Table Display

**Early Injection Commissioning**

Data input:

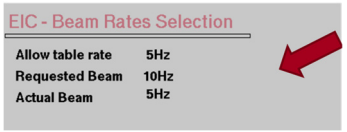
| Timing Sequence | Charge |
|---|---|
| 0Hz | 300pC |
| 1Hz | 300pC |
| 10Hz | 300pC |
| 1MHz | 300pC |
| Burst Mode | 300pC |

Allow Table:

| Allow Sequence | Power Class | Timing Sequence |
|---|---|---|
| AS2 | PC2 | all |
| AS1 | PC1 | 10Hz,1Hz,0Hz, Burst Mode |
| AS0 | PC0 | none |

MPS will choose a PC and communicate that to timing.

  - Actual Rates Display



# Conclusion

- Early Injector Commissioning (EIC) TPG GUI pre-configured sequence selection and static Allow Table
- EIC GUIs are opportunity to gather more detailed requirements
- Challenges: handle multiple interfaces; design GUIs with appropriate level of complexity; satisfy LCLS-II machine commissioning
- GUIs and associated business logic dynamically adapt to current condition allowed by MPS