# CESR TA Machine Studies Task Overview

## I. Experiment Description

<table>
<thead>
<tr>
<th>Experimental Topic</th>
<th>ODR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification*</td>
<td>INST</td>
</tr>
<tr>
<td>Coordinator/Experimenter</td>
<td>MGB</td>
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</tbody>
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### Primary Goals
To set up and test the CERN ODR detector

### Description†

#### Preparatory Studies
- Test new steering controllers (47,48W,49,48E)
- Test bumps through ODR chamber
- Test radiation loss monitors w/o & w/ beam
- Correct phase advances/beta functions
- Correct orbit
- Low Emittance Tuning for small beam size
- Check v beam size controls
- Check beam stability to 10 mA
- Check vert scrapers with beam

#### Non-beam Testing
- Test replacement chamber controls
- Test target insertion controls
- Test target rotation controls
- Test control room chamber positon readout
- Test temperature readouts
- Test ODR camera triggering wrt CBPM triggering

#### ODR Studies
- Inject 0.75 mA single bunch
- Check/correct phase advance/beta-functions & coupling
- Correct orbit
- Measure vertical beam size
- Ramp CESR
- Time in BPM48AW

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* Machine Studies Classifications:
  - EC - Electron Cloud
  - LET - Optics Correction and Low Emittance Tuning
  - xBSM - x-ray Beam Size Monitor
  - INST - Instrumentation (BPM development, RFA development, other)
  - MDEV - Machine Development (includes injection configuration, injection tuning, custom orbit setup, instrumentation preparation, etc.)
  - MREC - Machine Startup (recovering conditions after down time)

† Attach additional pages for experimental description if needed
• Dump beam and retract the replacement chamber
• Refill with 0.75 mA single bunch
• Move in the target in steps to place beam between
• the wider slit
• Observe beam lifetime, downstream loss monitor
• counting rates, signal on ODR camera (SR?),
• Adjust vertical bumps to reduce DS radiation &
• increase lifetime, measure beam position
• After centering check whether insertion of V scrapers
  reduces DS radiation
• Top off beam after retracting the target
• When the beam is fully within the wider slit, make
  following measurements
• Turn-by-turn CBPM trajectory
• ODR signal
• Observe the signals on the RF probes
• Change Coupling 8 & 9, observe xBSM, lifetime &
  radiation

• At the end of the studies, with the replacement chamber
  in place fill to 50-100 mA and observe
  o Any heating on the replacement chamber cooling
    lines
  o The signals on the RF probes

<table>
<thead>
<tr>
<th>Special Needs/Requests</th>
<th>Installation of ODR</th>
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<tbody>
<tr>
<td><strong>Prerequisites‡</strong></td>
<td><strong>Personnel</strong></td>
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<tr>
<td>Optics Prep</td>
<td>MGB, JSh</td>
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<tr>
<td>Installation</td>
<td>E-shop, Accel Techs, Riggers, et al</td>
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<tr>
<th>Time Requested§</th>
<th>No. Shifts</th>
<th>Principal Tasks</th>
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<tbody>
<tr>
<td>6 hour shift</td>
<td>1</td>
<td>Prep Studies</td>
</tr>
<tr>
<td>8 hour shifts</td>
<td>3</td>
<td>ODR Studies</td>
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‡ Indicate other machine work that is required in preparation for this machine studies experiment.
§ Indicate the principal shift topics and estimated number of shifts required
## II. Machine Studies Assignments

Reserved for Project Management Team Use

<table>
<thead>
<tr>
<th>Topic ID</th>
<th>Priority**</th>
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<thead>
<tr>
<th>Shift Assignments</th>
<th>Date</th>
<th>Shift</th>
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** Priority Scale:

1. Critical – results are necessary for preparation for subsequent down/run periods
2. Very high – results are strongly desired for achieving program milestones or in preparation for subsequent down/run periods
3. High – results are of immediate interest but not require
4. Moderate – results should be pursued at the first convenient opportunity
5. Low – results are not presently a high priority for either project milestones or planning