# CHART ROADMAP 2032

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Contents



## 1. Executive Summary (Lenny, all))

Introduction to CHART and its activities, linking them to client communities, programs, facilities:

- Particle Physics (FCC, Muon Collider, HIPA)
- Photon Science (LEAPS, SLS2.0, SwissFEL)
- Neutron Science (SINQ)

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Mention the added value for user communities such as Biology and Chemistry, and prospective synergies with Geosciences (Geology, Geodesy data?), Astronomy (magnet technology?), fusion, as well as sustainability upgrades of HIPA.

## 2. Findings and Recommendations (Lenny)

Similar to the Executive Summary and Recommendations, p.4 in the present CHART Roadmap document.

## 3. Update on Existing CHART Projects

Brief overview of ongoing CHART research projects and their recent output. Keep it brief and technically high-level.

### 3.1. **Beam Dynamics (Tatiana).**

### 3.2. **FCC-ee Positron Source demonstrator (Paolo).**

### 3.3. **Geodesy and Geology (Lenny/CERN colleague?)**

### 3.4. **Superconducting Magnets (Bernhard, Marco, Carmine).**

3.4.1. *Conductors (Carmine).*

3.4.2. *Energy-saving magnet systems (Bernhard).*

3.4.3. *High-field magnets (Bernhard).*

3.4.4. *Undulators (Marco).*

3.4.5. *Enabling technologies (Bernhard).* (Powering, Protection, Materials, Cryogenics, Instrumentation and Signal Analysis)

### 3.5. **Sustainability Studies for Future Accelerators (Mike).**

## 4. Prioritized Research towards Particle Physics Needs

In this and the following sections we collocate our CHART roadmap within the topical roadmap of our "client communities" (FCC, Muon Collider, LEAPS/SLS/SwissFEL, SINQ, etc.). Each subsection first introduces the fields overall roadmap as far as it is known / citable. Then we provide relevant details in our respective technical roadmaps for the 2025-2032 time frame. j Again, we keep it brief and technically high-level.

### 4.1. **FCC-ee.** FCC-ee roadmap intro.

4.1.1. *Beam dynamics (Tatiana).*

4.1.2. *Energy-saving magnet systems (Bernhard).*

4.1.3. *Geology and Geodesy (Lenny/CERN colleague).*

4.1.4. *Injector design and demonstrator (Paolo).*