J-PARCでの核子構造研究（計画）

前回の原稿　：

$\bar{d}/\bar{u}$ measurement at large x @ J-PARC

- **Drell-Yan with 50 GeV proton beam**
- 10^{12} protons per spill (3 s)
- 50-cm long LH2/LD2 targets
- 60-day runs for each targets
- assuming 50% efficiency

J-PARC Proposal P-04

(Co-spokespersons; J. C. Peng and S. Sawada)

Approval Status: Deferred

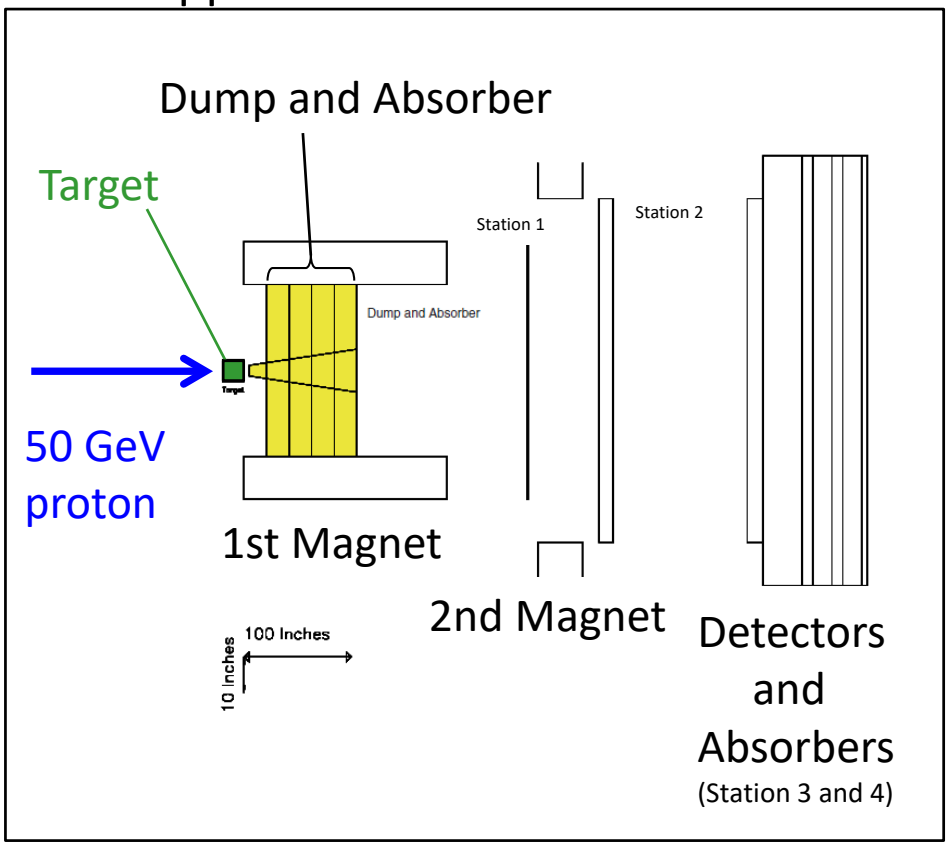
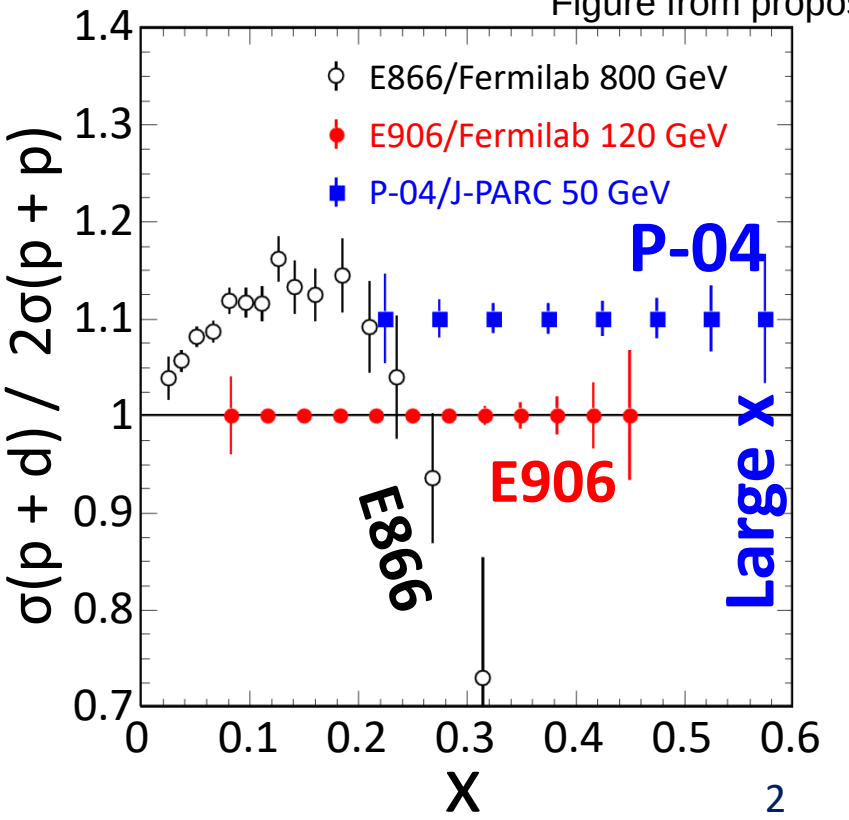


Figure from proposal



前回の原稿　:

$\bar{d}/\bar{u}$ measurement at large x @ J-PARC

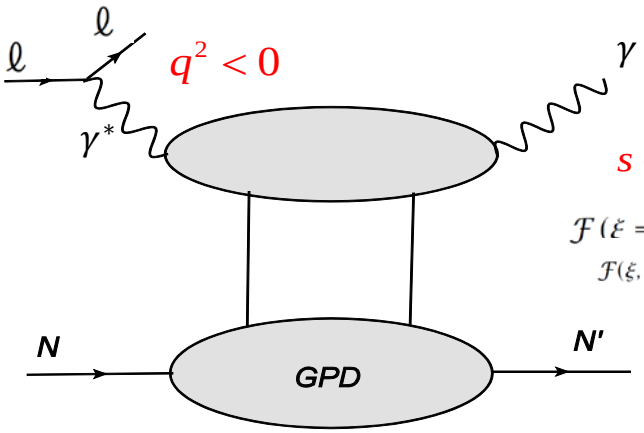
J-PARC 主リング :　現状　30 GeV 運転

(少なくとも近い将来には)
50 GeV 運転への Upgrade は現実的ではない
↓
この実験も(少なくとも近い将来には)
現実的ではない

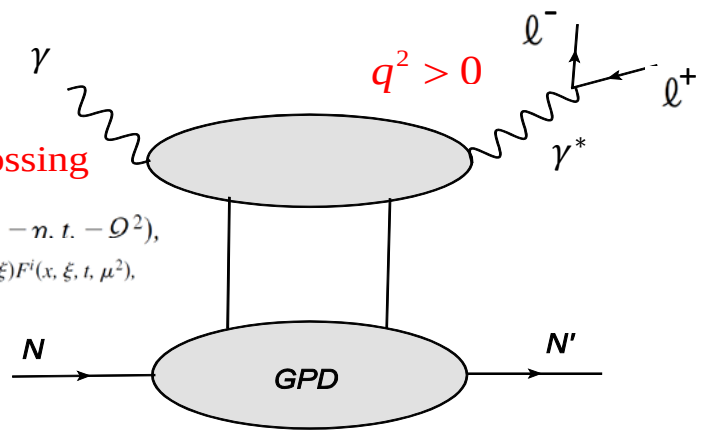
GPDsの抽出

Muller et al., PRD 86 031502(R) (2012)

Deeply Virtual Compton Scattering (DVCS)



Time-like Compton Scattering (TCS)

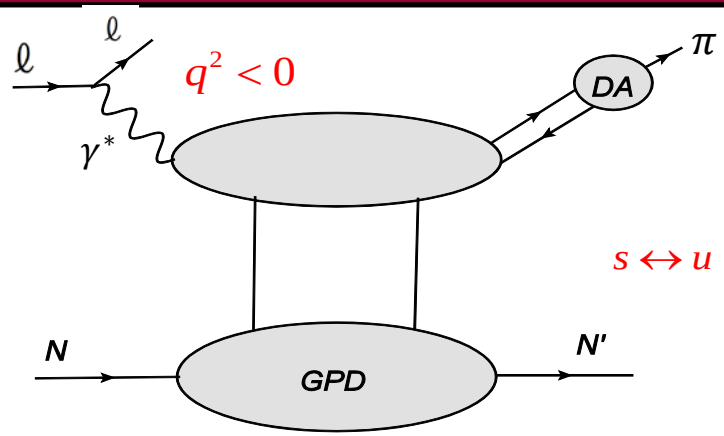


$s \leftrightarrow u$ channel crossing

$$\mathcal{F}(\xi = n.t.\ \mathcal{Q}^2) \overset{\mathrm{SL}\to\mathrm{TL}}{\Rightarrow} \mathcal{F}(\xi = -n.t.\ -\mathcal{Q}^2),$$

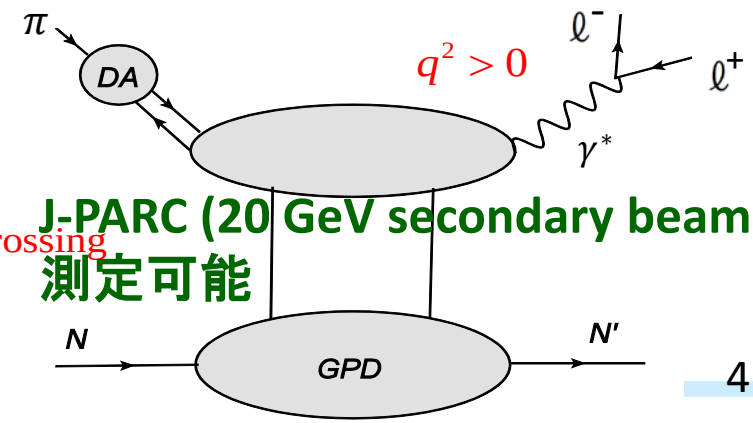
$$\mathcal{F}(\xi, t, \mathcal{Q}^2) = \int_{-1}^{1} dx \sum_{i=u,d,\cdots,g} {}^{S}T^{i}(x, \xi) F^{i}(x, \xi, t, \mu^2),$$

Deeply Virtual Meson Production (DVMP)



$s \leftrightarrow u$ channel crossing

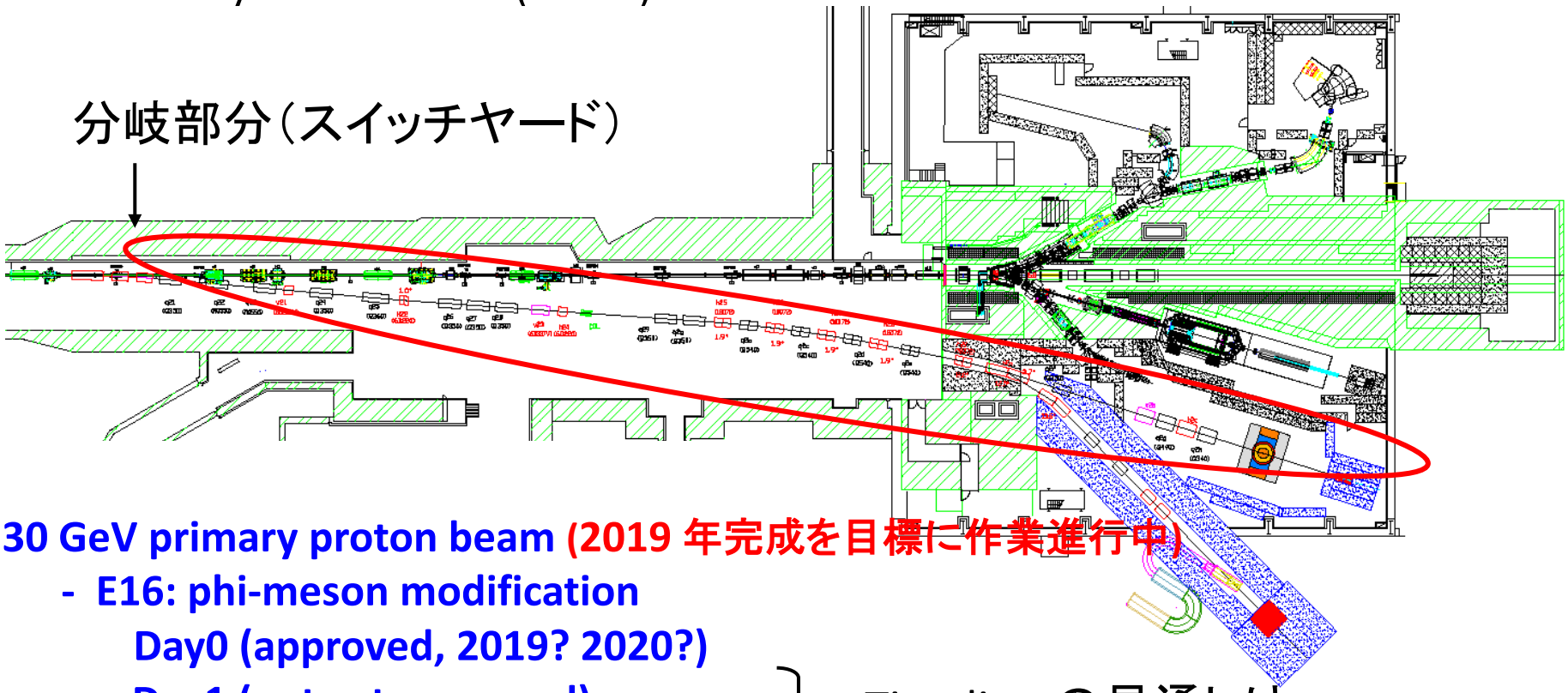
Exclusive meson-induced DY



J-PARC (20 GeV secondary beam)で測定可能

J-PARC 高運動量ビームライン

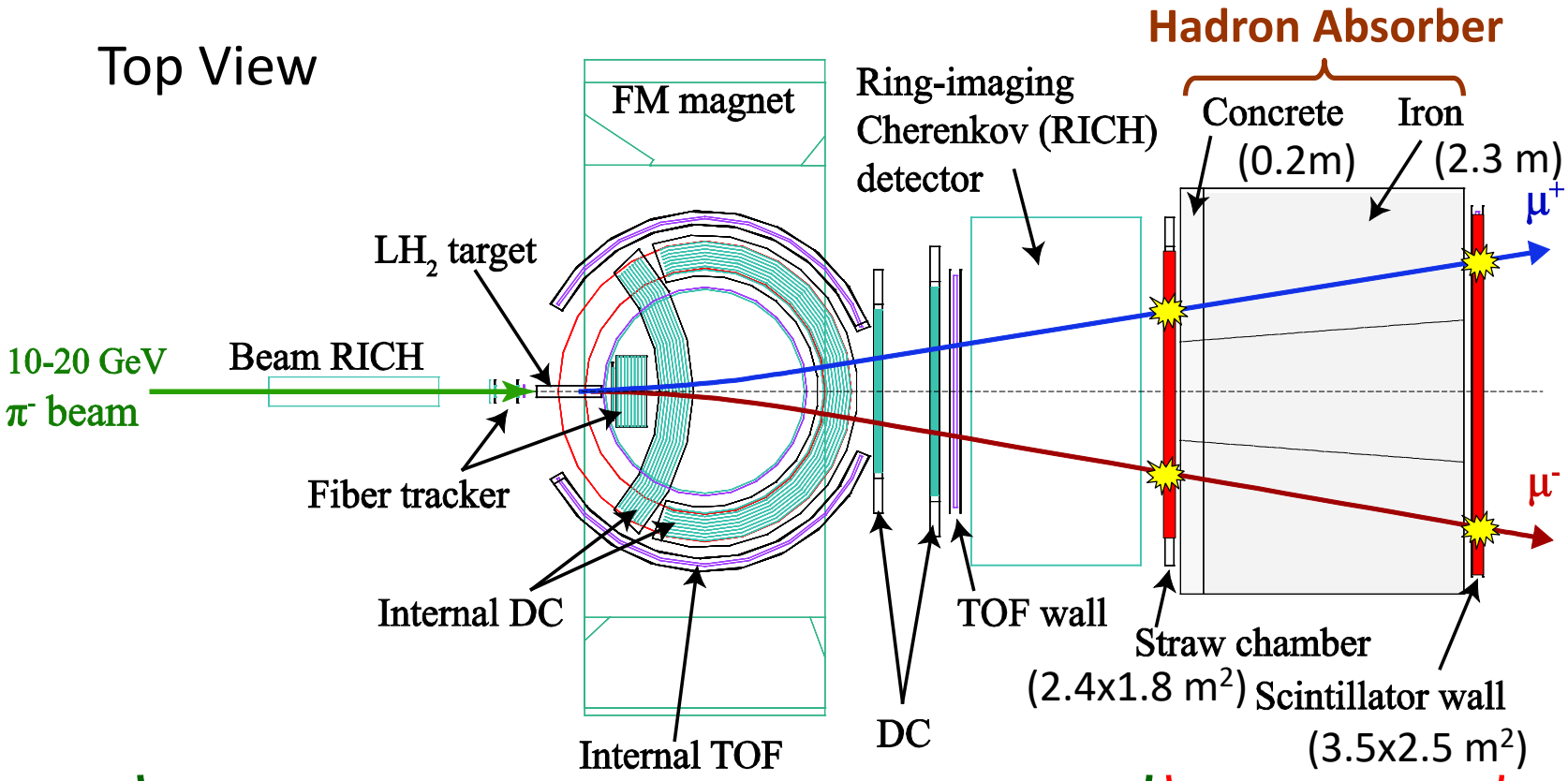
- Primary Proton Beam (30 GeV), 10^{10} per spill
- High Momentum un-separated secondary beam (< 20 GeV/*c*), 10^{8} per spill
- Primary Proton Beam (8 GeV) for COMET



- **30 GeV primary proton beam (2019 年完成を目標に作業進行中)**
  - **E16: phi-meson modification**
    - **Day0 (approved, 2019? 2020?)**
    - **Day1 (not yet approved)**
- **20 GeV secondary meson beams (20??)**
  - **E50: charmed baryon spectroscopy + exclusive Drell-Yan (20??)**

Timeline の見通しは未だ不透明（予算次第）

Exclusive Drell-Yan ($\pi^- p \to \mu^+ \mu^- n$) 測定のための J-PARC E50実験セットアップの拡張計画



Stage-1 approved by J-PARC PAC-18, August 12, 2014.

LoI is currently being prepared.