PARTONS project to study Generalized Partons Distributions

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TCS@JLab meeting, 16 January 2017

PARTONS (PARtonic Tomography Of Nucleon Software)

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PARTONS (PARtonic Tomography Of Nucleon Software)

- Modern platform devoted to study GPDs
- Design to support the effort of GPD community
- Can be used by both theoreticians and experimentalists

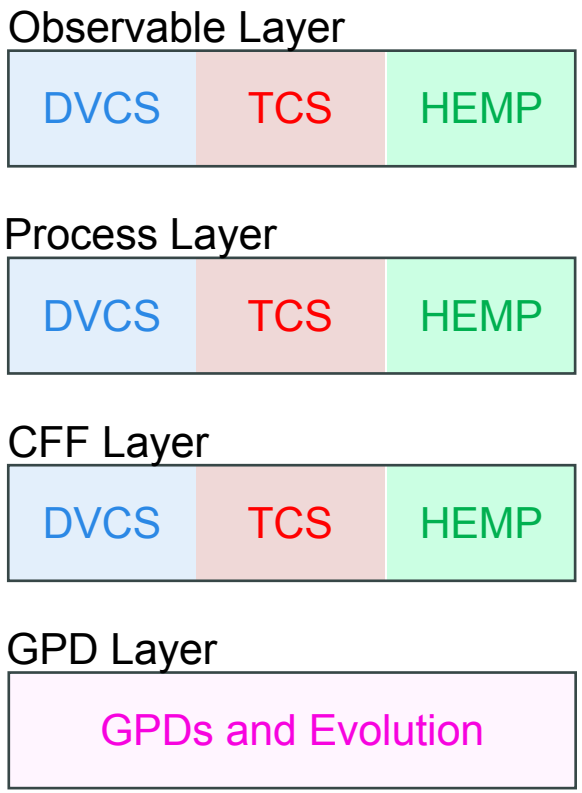
Layered structure

- one layer = collection of modules designed for common purpose
- one module = one physical development
- operations on modules provided by Services, e.g. for GPD Layer

```
GPDResult computeGPDModel
        (const GPDKinematic& gpdKinematic, GPDModule* pGPDModule) const;
GPDResult computeGPDModelRestrictedByGPDType
        (const GPDKinematic& gpdKinematic, GPDModule* pGPDModule,
        GPDType::Type gpdType) const;
GPDResult computeGPDModelWithEvolution
        (const GPDKinematic& gpdKinematic, GPDModule* pGPDModule,
        GPDEvolutionModule* pEvolQCDModule) const;
...
```

- what can be automated is automated
- features improving calculation speed

  e.g. CFF Layer Service stores the last calculated values



Interface

- C++
- XML

Database

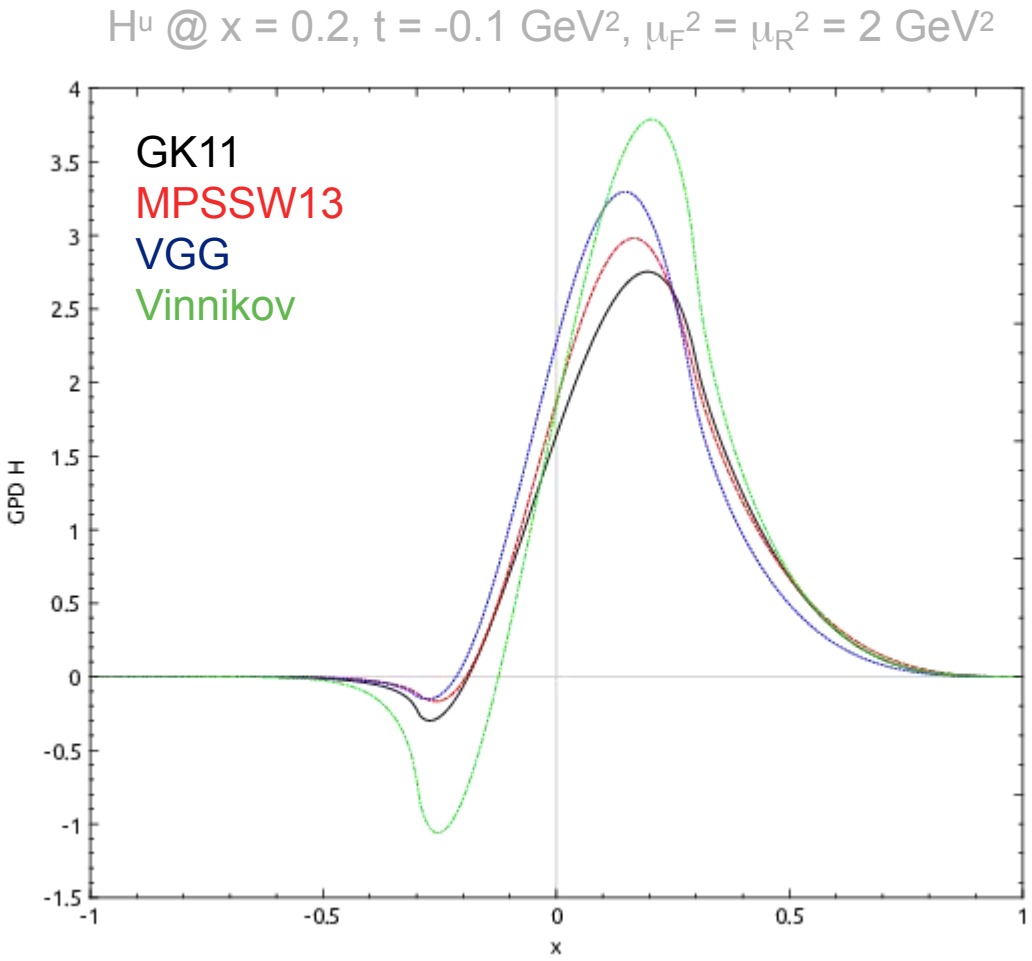
- Result computed by each layer can be stored/retrieved from database
- MySQL and SQLite support
- Optimized for large transactions
- Database also to store experimental data → Fits

Threads

- To speed up calculation

Existing modules:

- GPD: GK11, VGG, Vinnikov, MPSSW13, MMS13
- Evolution: Vinnikov code
- CFF (DVCS only): LO, NLO (gluons and light or light + heavy quarks)
- Cross Section (DVCS only): VGG, BMJ, GV
- Running coupling: 4-loop PDG expression, constant value



PARTONS (PARtonic Tomography Of Nucleon Software)

- For detailed description of platform see arXiv: hep-ph/1512.06174
- Outgoing phenomenology-oriented analyses
  - EIC predictions
  - Fits to JLab DVCS data
- First release expected in this year