

# QCDNUM QCD+QED evolution

Work in progress  
(or lack thereof)

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# QCDNUM upgrade

- Extend the QCDNUM convolution toolbox to a combined evolution/convolution toolbox
- With this toolbox you can feed-in your own splitting functions, perturbative expansion coefficients, and do n-fold coupled evolutions
- Needs a new dynamic memory organisation

# Extended QCDNUM toolbox

Memory management (extended functionality)

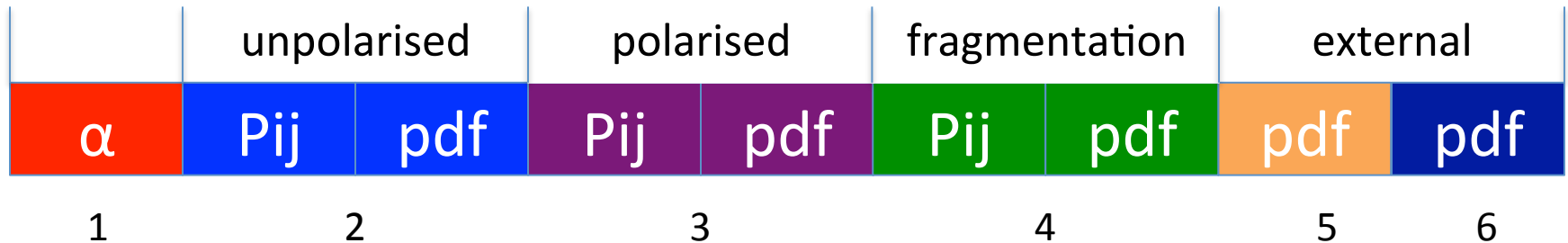
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Coupled evolution tool (new)

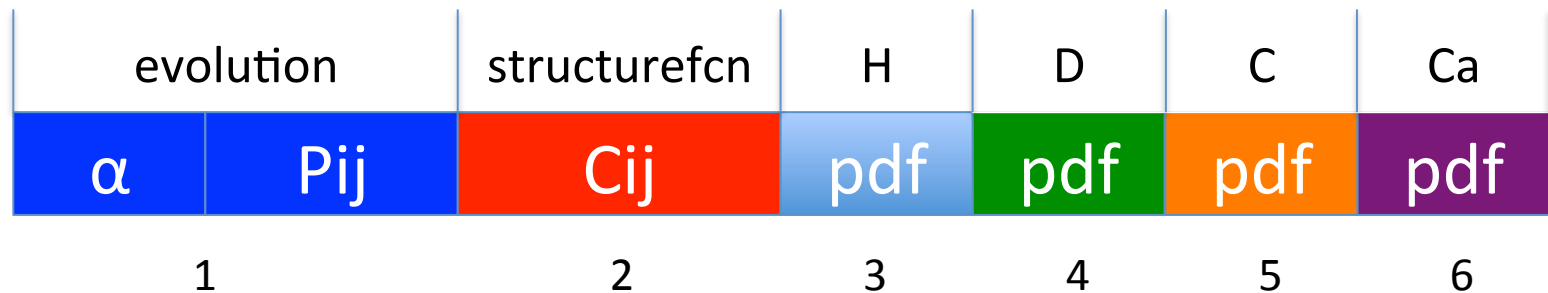
# New memory management

- Create in a local store  $w(\text{nwords})$ 
  - Weight tables of splitting and coefficient functions (old)
  - Lookup tables of expansion coefficients, like  $\alpha_s^n$  (new)
  - Pdf tables (new)
- Can organise tables into **sets** (new)

# QCDNUM internal memory layout (6+ sets)



# Another possible memory layout (6 sets)



# New evolution tool

Expansion coefficients

Coupled evolution

Subroutine or function	Description
<b>EVFILLA</b> ( w, id, subr )	Fill coefficient table
EVGETAA ( w, id, iq, *nf, *ithresh )	Get coefficient
<b>EVDGLAP</b> ( w, subr, idw, ida, idf, n, iq0, *eps )	Coupled evolution
EVPDFIJ ( w, id, ix, iq, ichk )	Pdf at a grid point
<b>EVPLIST</b> ( w, id, x, qmu2, *pdf, m, ichk )	Pdf interpolation
<b>EVPDFXQ</b> ( w, id, x, nx, q, nq, *table, ichk )	Pdf interpolation
<b>EVFCOPY</b> ( w, id, def, nf, iset )	Copy to internal memory

Output arguments are prefixed with an asterisk (\*).

PDF interpolation

Copy to internal memory

# Joblist and progress

- ✓ Coupled evolution routine (FFNS, forward only)
- ✓ New memory layout
- ✓ Upgrade internal memory (still some testing ....)
- Write `evdglap` user interface
- First beta release 17-01-0a
- Backward evolution, VFNS
- ✓ Updated write-up