

# SVD background: Software development

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# What we want

In general:

**A set of automated tools to analyze data of a background campaign**

So far, most of the work was done semi-manually and no dose maps were shown.

The processing was seriously error-prone.

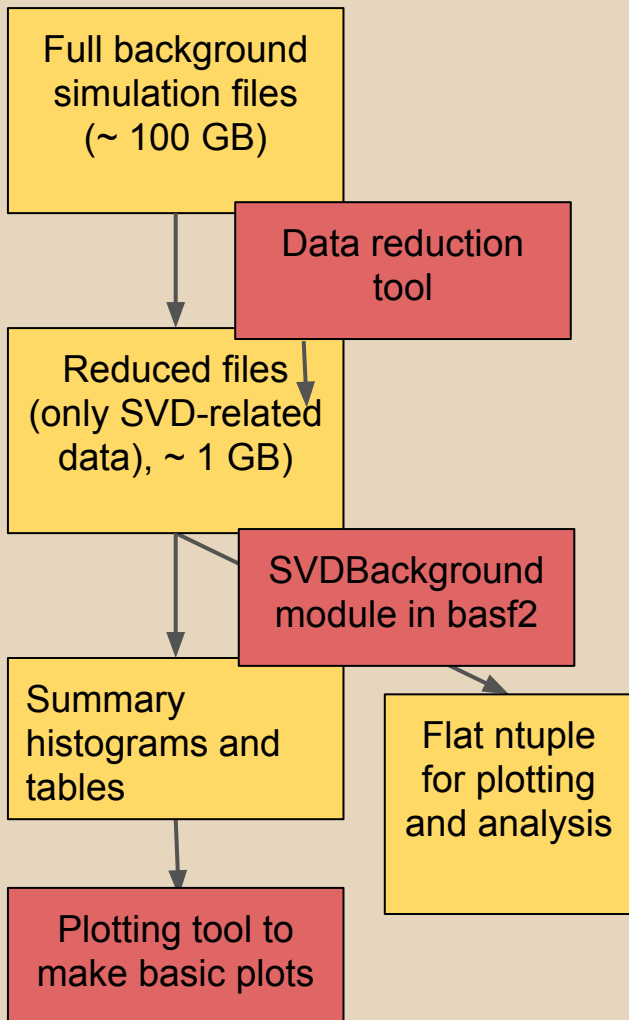
- Produce automatically all kinds of tables and summary charts for doses, neutron fluxes and occupancies.

**Better outputs from background analysis**

So far, we were showing mostly summary tables and bar plots for dose, neutron flux, and some measures of occupancy.

- Produce dose/neutron flux/occupancy maps to identify highly exposed parts of SVD
- Analyze exposure of chips and diamond sensors around the SVD.

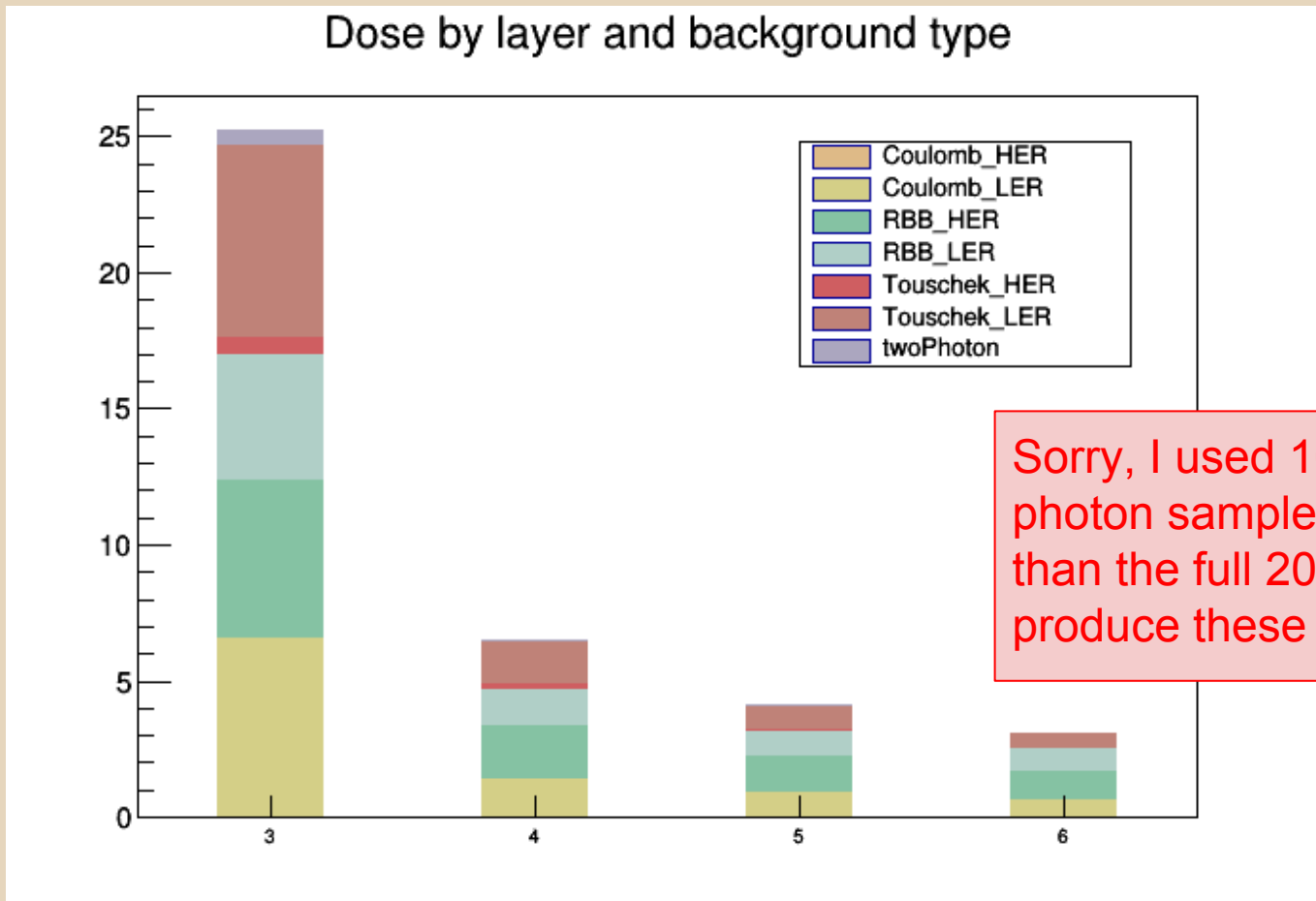
# What we currently have



- **Data reduction tool:** `svd/examples/reduce_bg_file.py`
  - A script that filters SVD-related data (including BeamBackHits) from the background simulation files (reduces tens of GB to ~1 GB)
- **SVDBackground module:** `svd/modules/svdBackground/src/SVDBackgroundModule.cc`
  - processes the original or reduced background files
  - outputs data for plots and summary tables
  - outputs a flat ntuple allowing more advance plotting from the output file
- **make\_bg\_plots tool:** `svd/background/tools/make_bg_plots.cc`
  - C++ application intended to do ROOT plotting for outputs of the

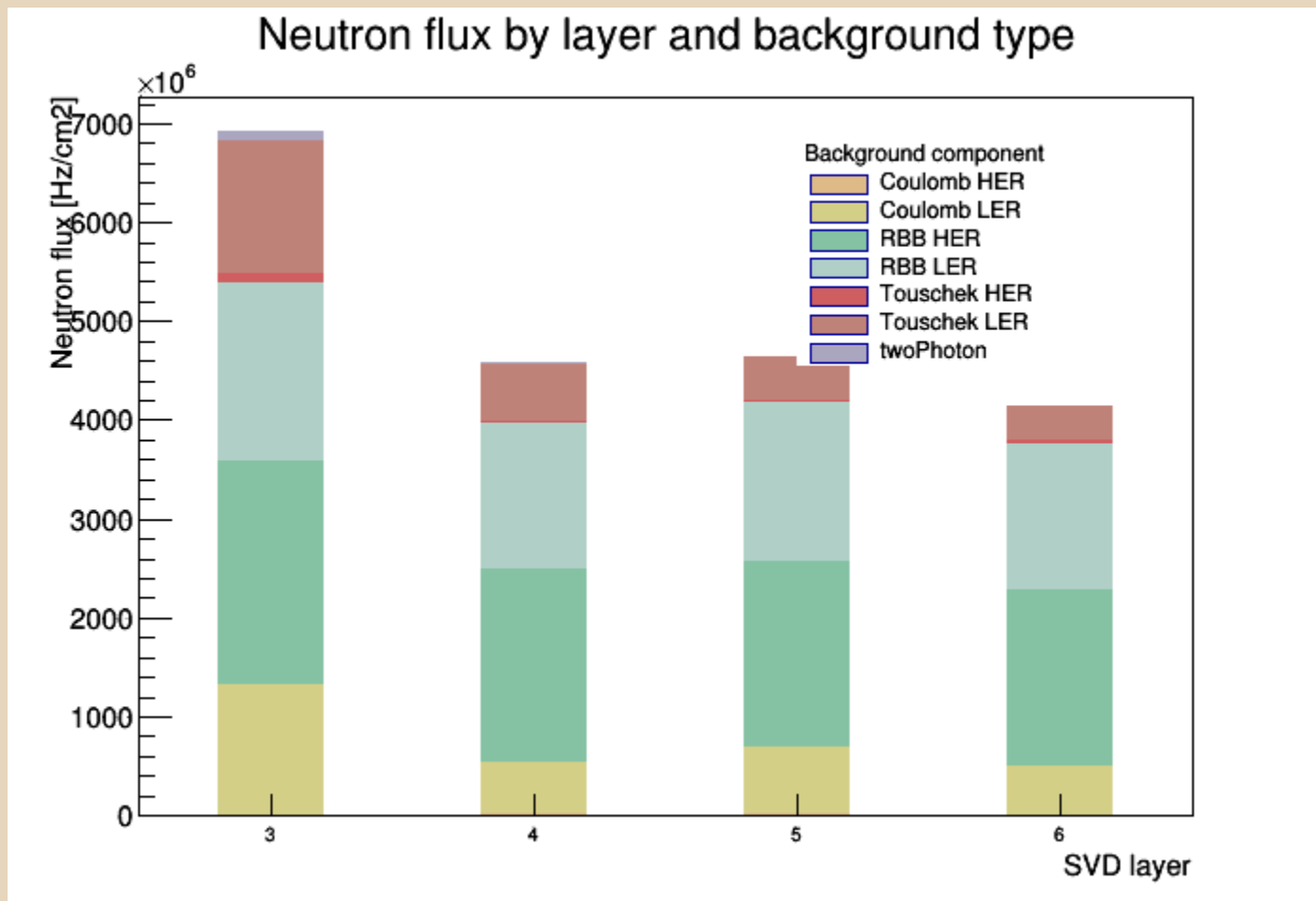
# Stacked bar plots

New version of stack bar plots produced by make\_bg\_plots tools



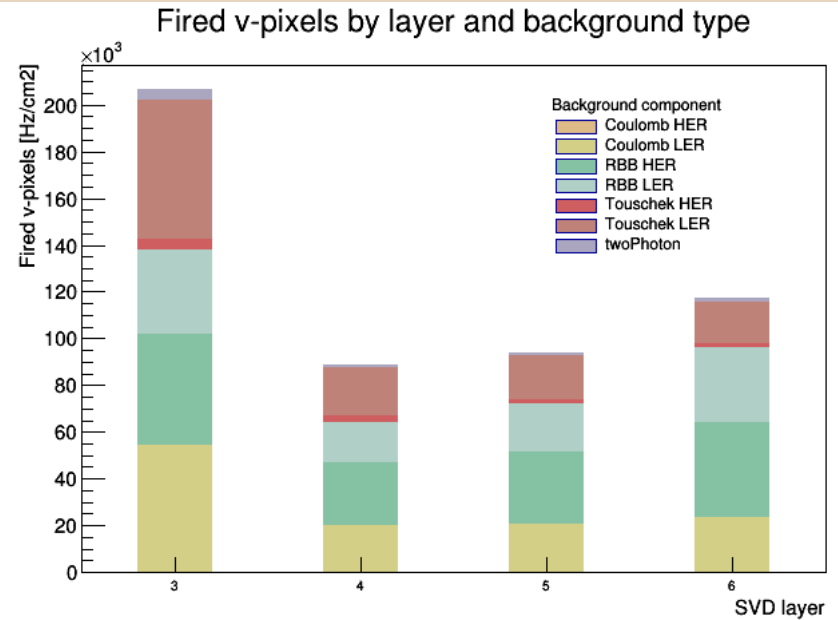
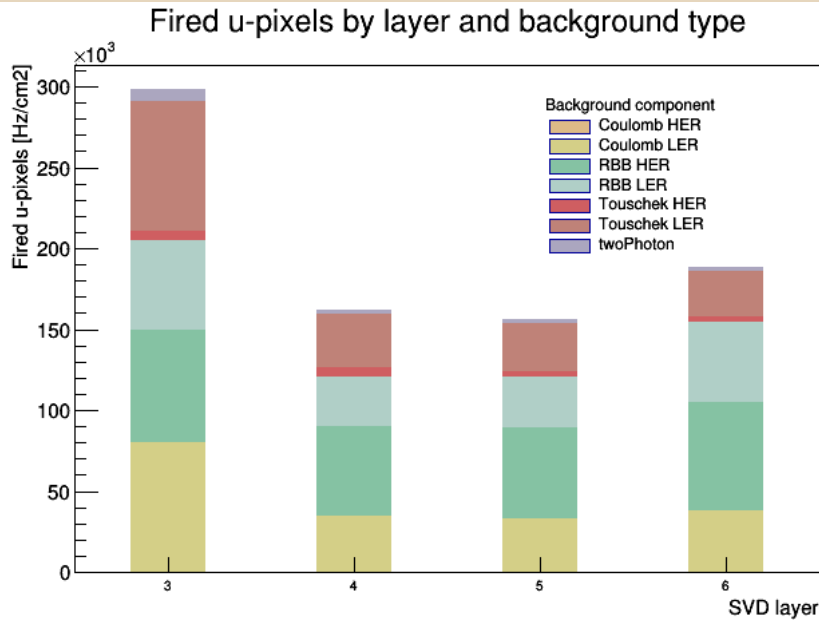
# Stacked bar plots

New version of stack bar plots produced by `make_bg_plots` tools



# Stacked bar plots

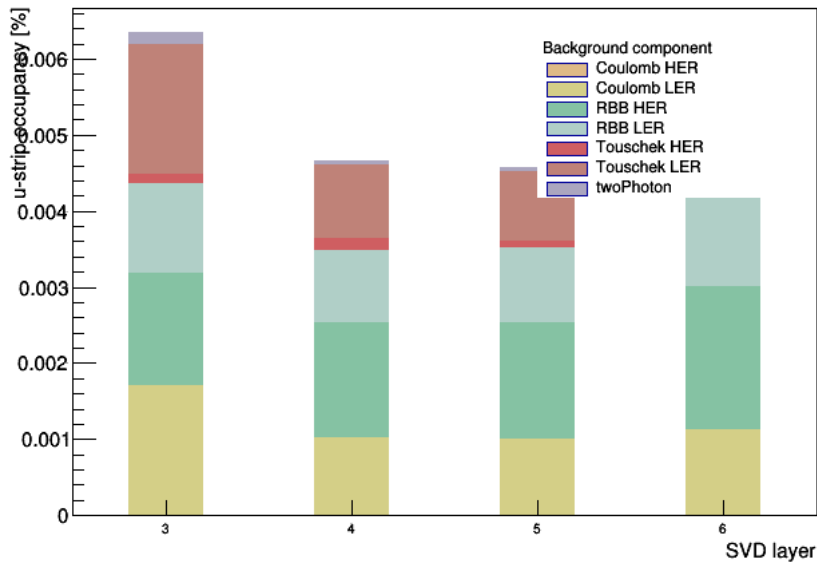
New version of stack bar plots produced by make\_bg\_plots tools



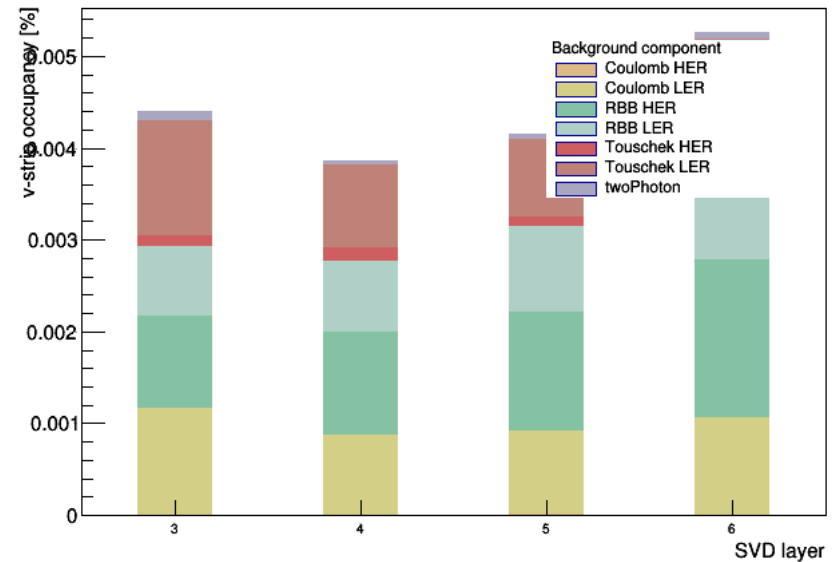
# Stacked bar plots

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u-strip occupancy by layer and background type

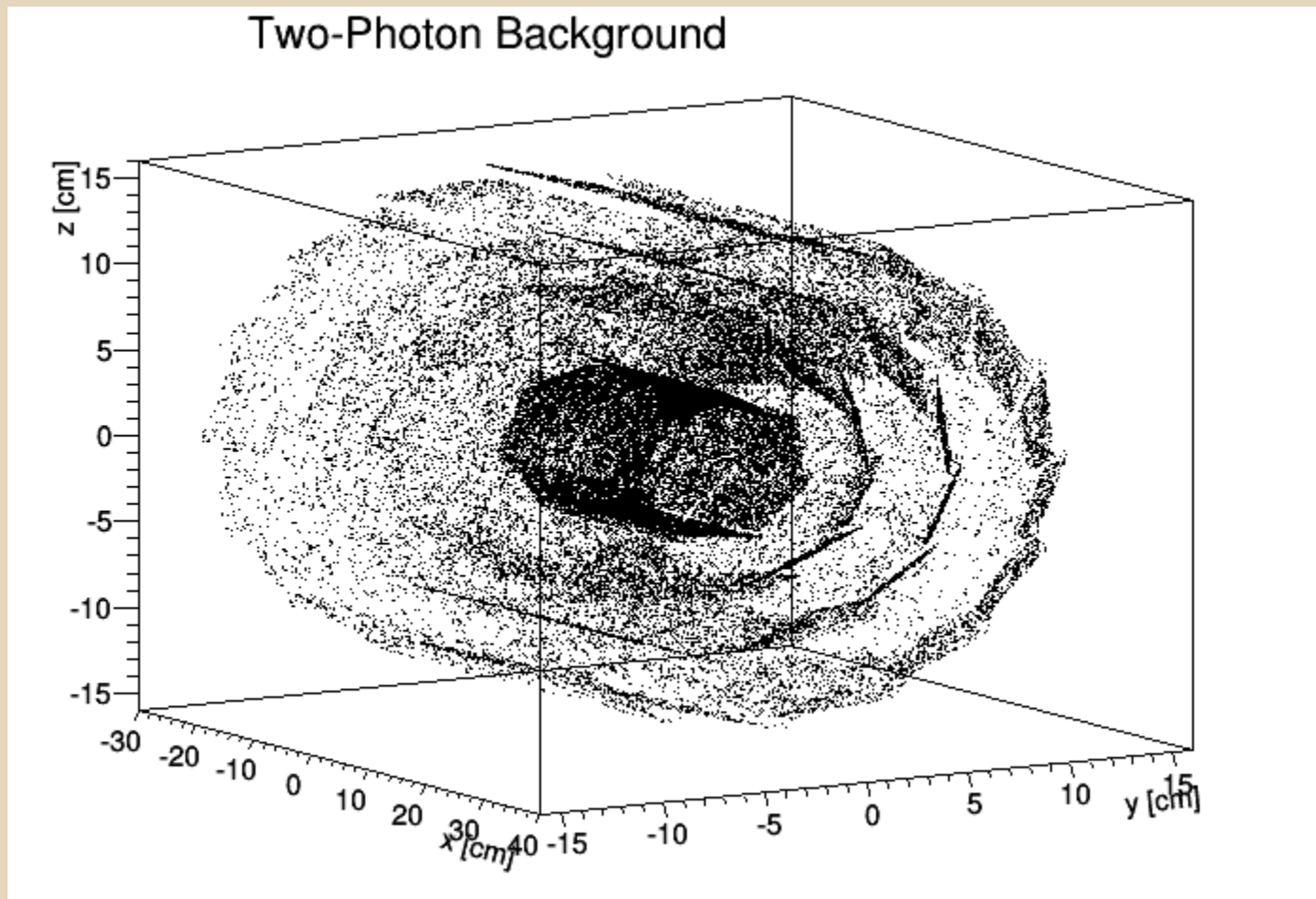


v-strip occupancy by layer and background type



# Maps

Will be shown by Nibedita in her next talk...





# Conclusions

- Getting background stuff ready for the 11th campaign
- Analysis of beam background campaigns will get much faster
- Software available to users and review in the basf2 svn

Thank you for attention.