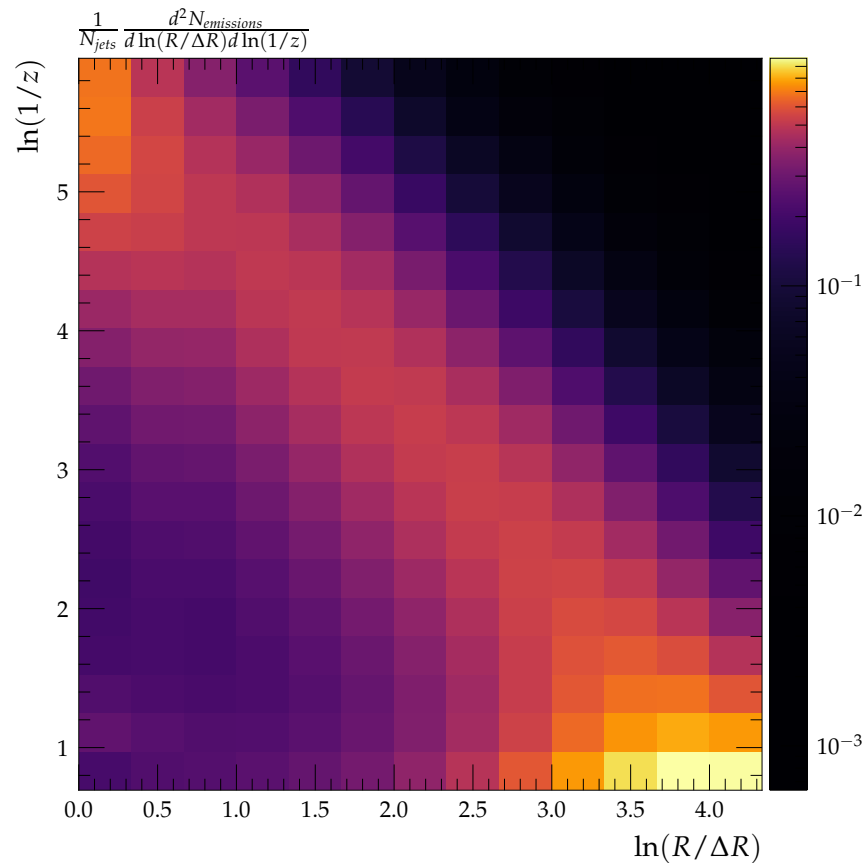


Rivet Matplotlib update

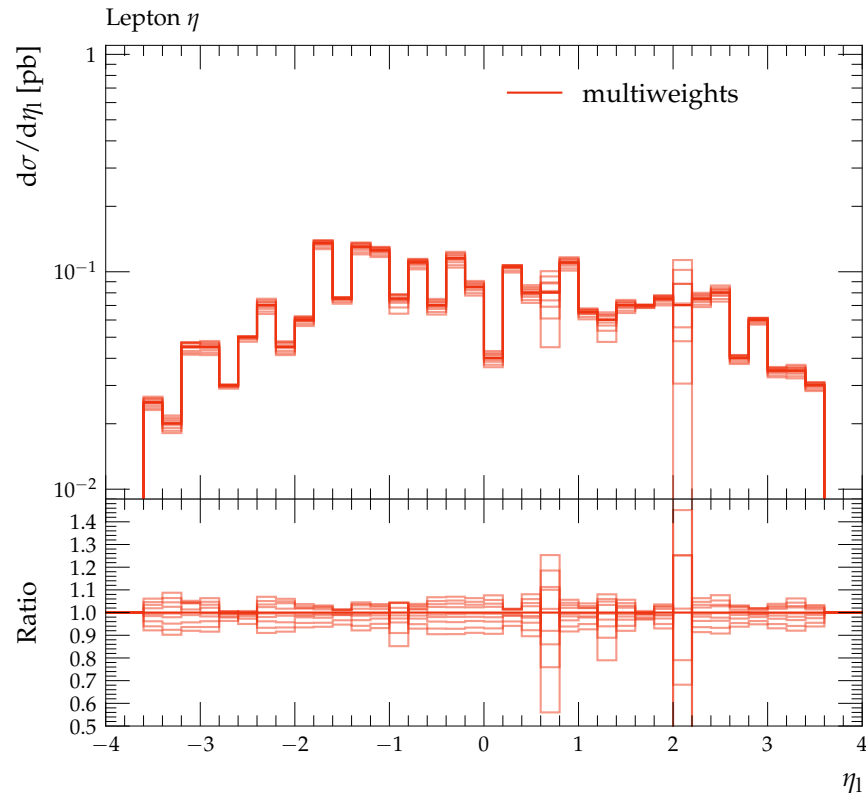
Rivet dev meeting
Jamie Yellen & Yoran Yeh
1 Feb 2023

- Rivet: [matplotlib-3-1-x](#)
- YODA: [matplotlib-1-9-x](#)
- Milestones/issues tracker:
 - <https://gitlab.com/hepcedar/rivet/-/milestones/6#tab-issues>
 - <https://gitlab.com/hepcedar/rivet/-/issues/315>
- **Today: 2D plots / multiweights (+error bands TODO)**

- [d01-x01-y01-2D.py](#)
- On our previous to do list: “handle multiple input YODA files”
- Options on the table:
 - Try to draw them on the same canvas with contour lines → main drawback is ‘discreteness’ / readability of the plot (maybe an idea for later)
 - **Simply create the 2D plot shown here for each YODA file (suggestion for now)**



- Added functionality to propagate multiweights from YODA onto plot canvas
 - Rivet ([d06de65cf](#))
 - YODA ([a663c9f4](#))
- Currently, draw multiweights in “old” style: individually colour matched with nominal and $\alpha=0.5$
- **Next step** combine into error bands, following logic from rivet-cmphysos
 - Shaded/hashed area around nominal



- [lepton_eta.py](#)

```
4 # mc from input yoda files in main panel
3 for label in dataf.mc_y_err.keys():
2     tmp_plot, = ax.plot(dataf.x_bins, dataf.mc_y_hist[label], color=mc_styles[label]['color'],
1         linestyle=mc_styles[label]['linestyle'], drawstyle='steps-pre',
58         solid_joinstyle='miter', zorder=mc_styles[label]['zorder'], label=label)
1     legend_handles += [tmp_plot]
2     ax.errorbar(dataf.x_points, dataf.mc_y_err[label], color=mc_styles[label]['color'],
3         xerr=dataf.x_errs, yerr=[dataf.mc_y_down[label], dataf.mc_y_up[label]],
4         linestyle='none',
5         zorder=mc_styles[label]['zorder'])
6
7     for multiweightlabel in dataf.mc_y_multiweights.keys():
8         if multiweightlabel.startswith(label):
9             tmp_plot, = ax.plot(dataf.x_bins, dataf.mc_y_multiweights[multiweightlabel],
10                 color=mc_styles[label]['color'], linestyle=mc_styles[label]['linestyle'],
11                 drawstyle='steps-pre', solid_joinstyle='miter', zorder=mc_styles[label]['zorder'], alpha=0.5)
```


- Error bands
- A few command lines options
 - Deviation mode
 - Custom text boxes on plot (e.g. experiment label, luminosity, etc.)
 - ... go through the list of options and give user as much flexibility to tweak plots as possible
- Where to draw the line? —> Merge soon into main branch as 'rivet-mkhtml-mpl' alpha release