Status/Results November XY Scanner Campaign

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Outline

- Review
- Results
- Outlook

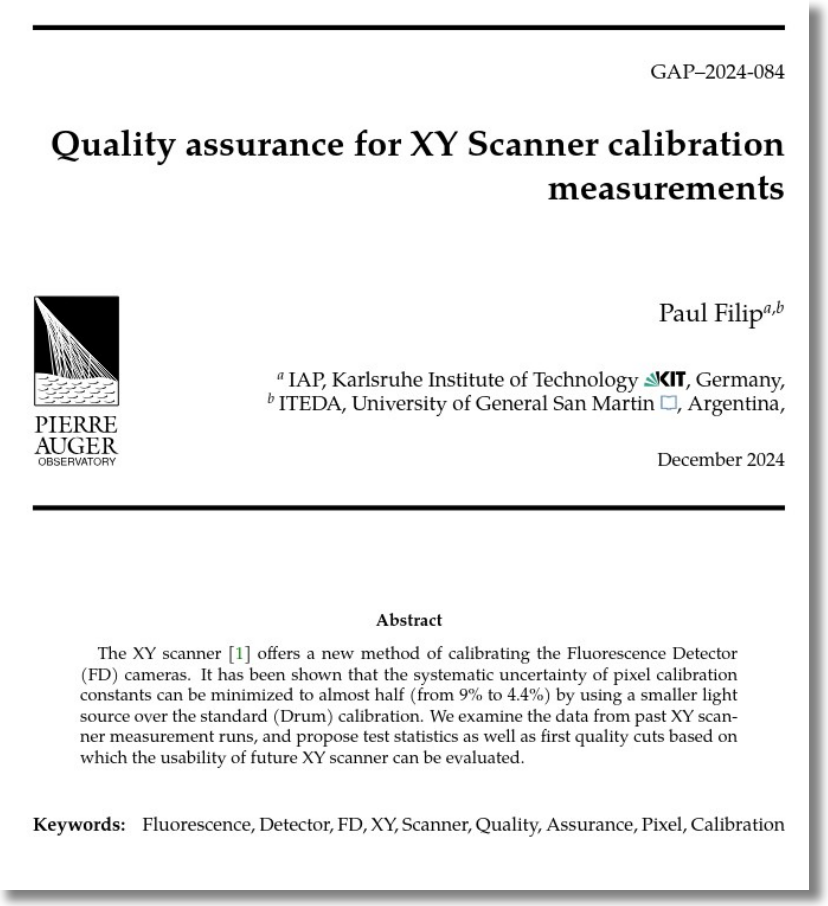
Review of November XY campaign

- FD shift **2024/11/20** – **2024/12/07** (17 nights)
  - 9 DAQ nights
  - 31 measurement runs
  - 27 telescopes
  - 4 people

- Thanks Hermann-Josef, Kai, Pavel, and Martin!

Quality control/cuts for calibration constants

- GAP-2024-084
  - Analyze past XY runs
  - Identify/Explain outliers
  - Propose quality cuts
- Imposed quality cuts
  - Light source stability
  - Measurement setup
  - FD Camera stability



GAP–2024-084

Quality assurance for XY Scanner calibration measurements

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Abstract

The XY scanner [1] offers a new method of calibrating the Fluorescence Detector (FD) cameras. It has been shown that the systematic uncertainty of pixel calibration constants can be minimized to almost half (from 9% to 4.4%) by using a smaller light source over the standard (Drum) calibration. We examine the data from past XY scanner measurement runs, and propose test statistics as well as first quality cuts based on which the usability of future XY scanner can be evaluated.

Keywords: Fluorescence, Detector, FD, XY, Scanner, Quality, Assurance, Pixel, Calibration

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		Oct. 2022	Oct. 2023	Nov. 2023	Nov. 2024	Info
Los Leones	LL1				16478	
	LL2				16475	
	LL3	15675			**16461**	
	LL4	15672			16458	
	LL5				**16464**	[1]
	LL6				**16472**	[2]
Los Morados	LM1			12830	13245	
	LM2			12822	13248	
	LM3			**12809**	13251	[3]
	LM4			**12806**	13261	[3]
	LM5			12825	13271	
	LM6			12819	13264x	[4]
Loma Amarilla	LA1		12328x		12791	
	LA2		**12292x**		12788	
	LA3		12275x		12785	
	LA4	11875	12301x		12796	
	LA5		**12307x**		12799	
	LA6		**12320x**		12802	
Coihueco	CO1			15959	16431	
	CO2			**15952x**	16428	
	CO3	15448		15941x	16420	
	CO4	15451		**15934x**	16415	
	CO5	**15443x**		**15984x**	**16407**	[5]
	CO6			15925x	**16412**	
HEAT	HE1	05616x	6020x	6070	**6522**	
	HE2	**05621x**	**6025**	6075	6516	
	HE3	05626x	6031x	**6066**	6519	

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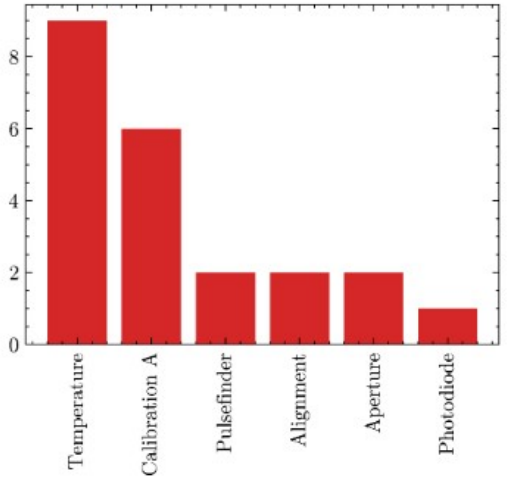
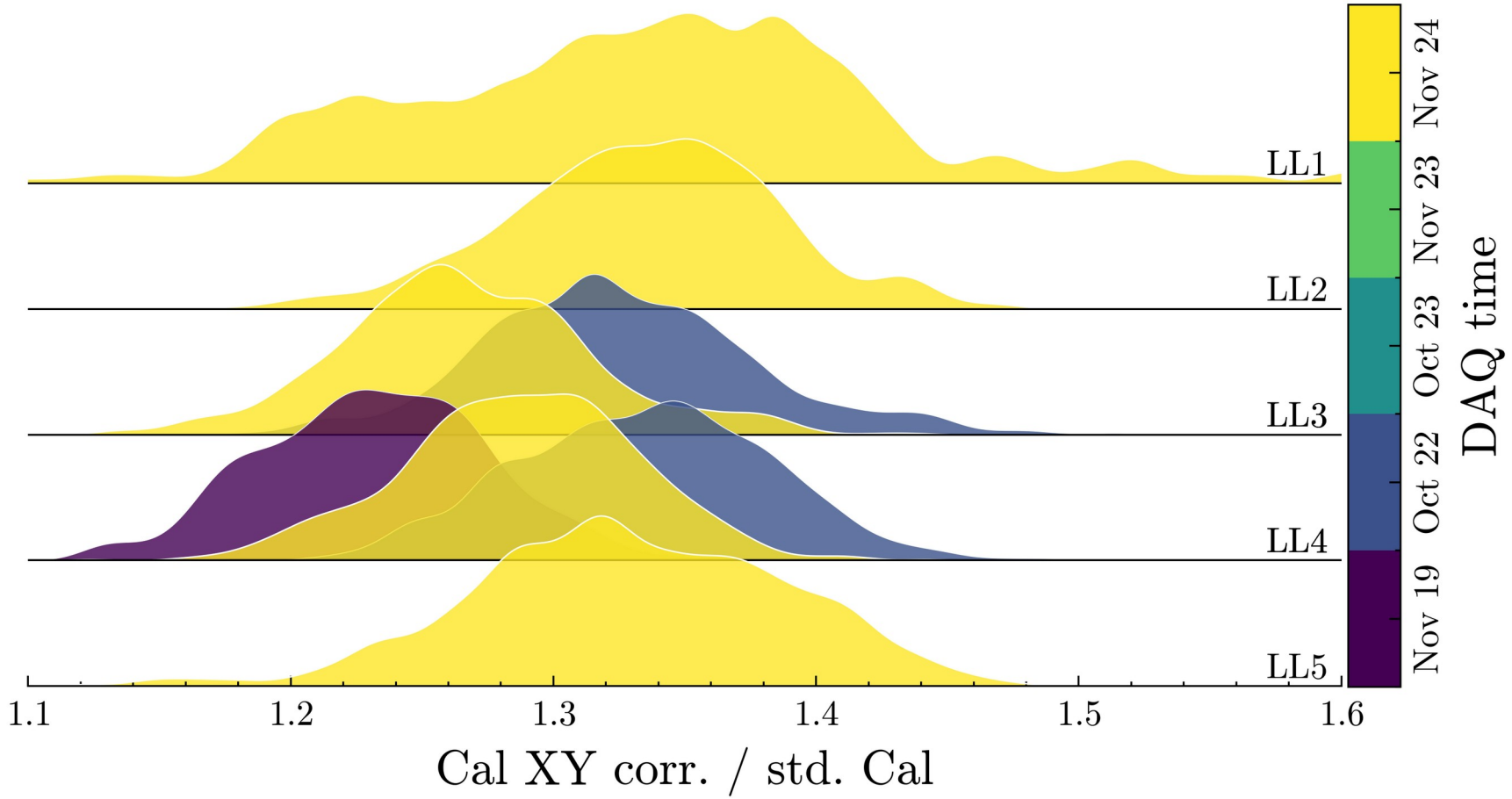
Quality control/cuts for calibration constants

- Most rejections stem from environmental influences
  - Temperature of LED between 29 and 31 degrees for every flash
  - Cal A mean of pixels before/after within 2.5%, max deviation <7.5%



  - Selection criteria for Cal A and Temperature too restrictive?
  - Single flash contributes <1% to exposed total signal
  - Camera drifts unavoidable in the first nights of the FD shift

Status/Result of last measurement campaign



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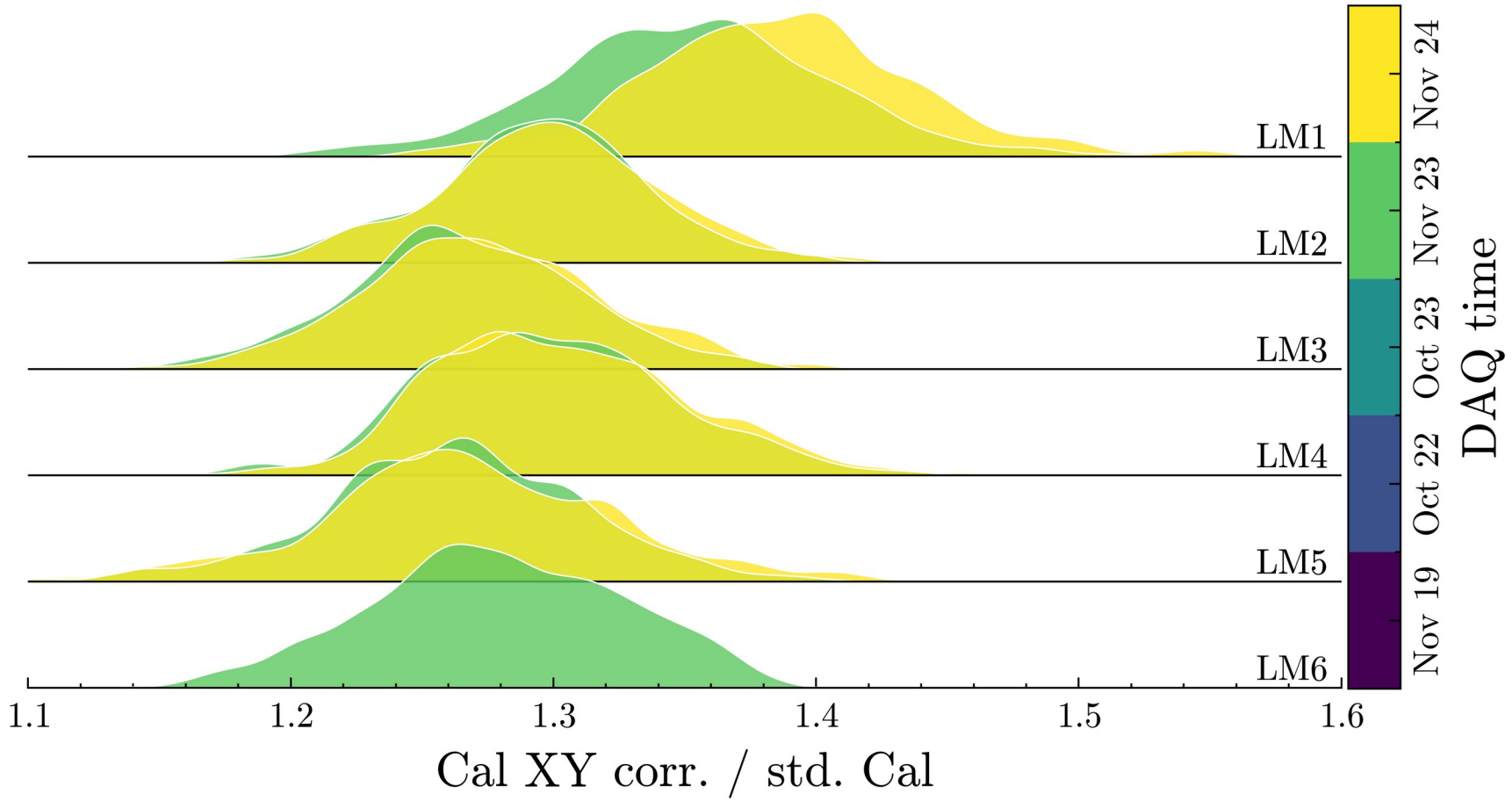

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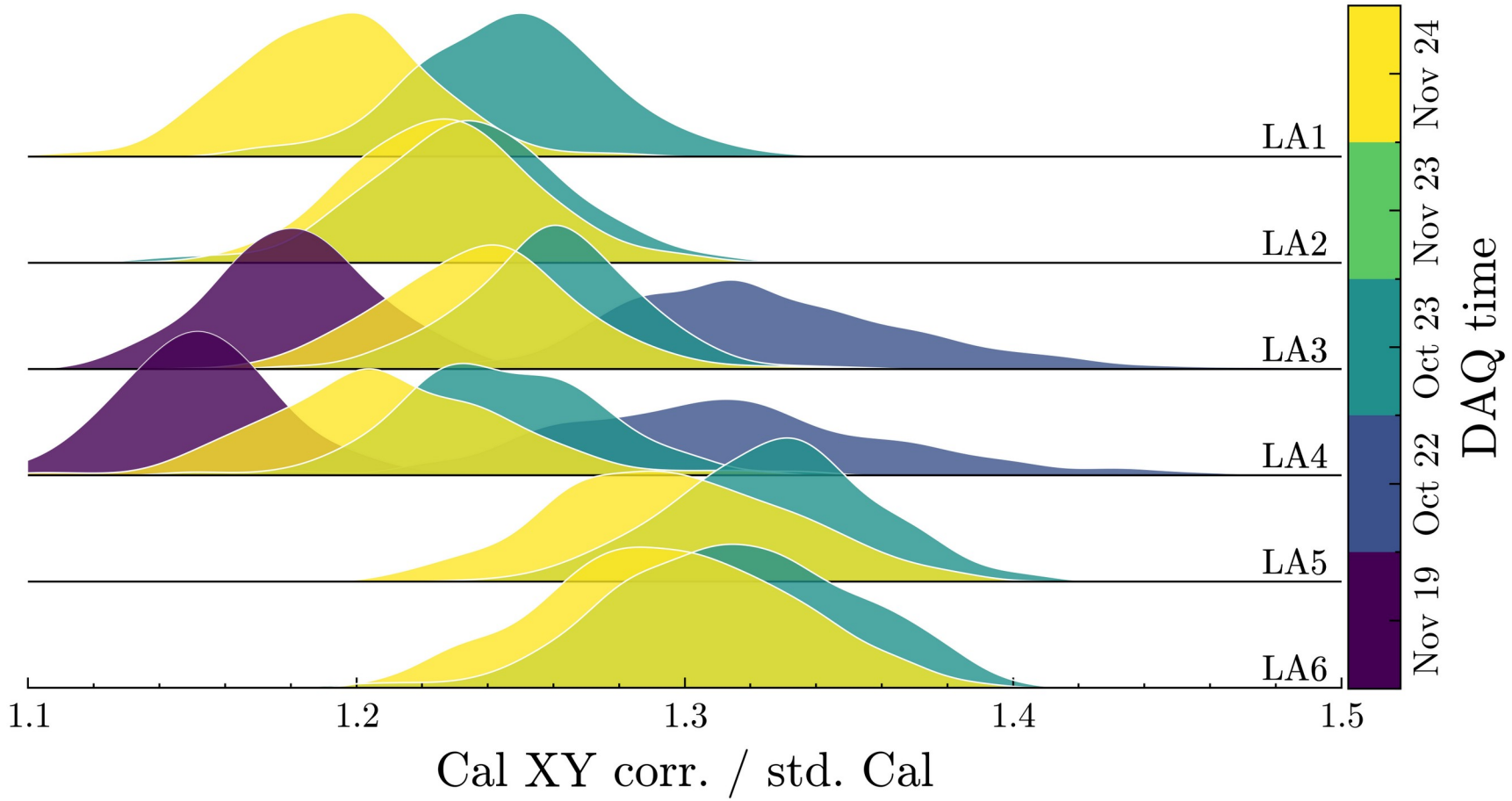

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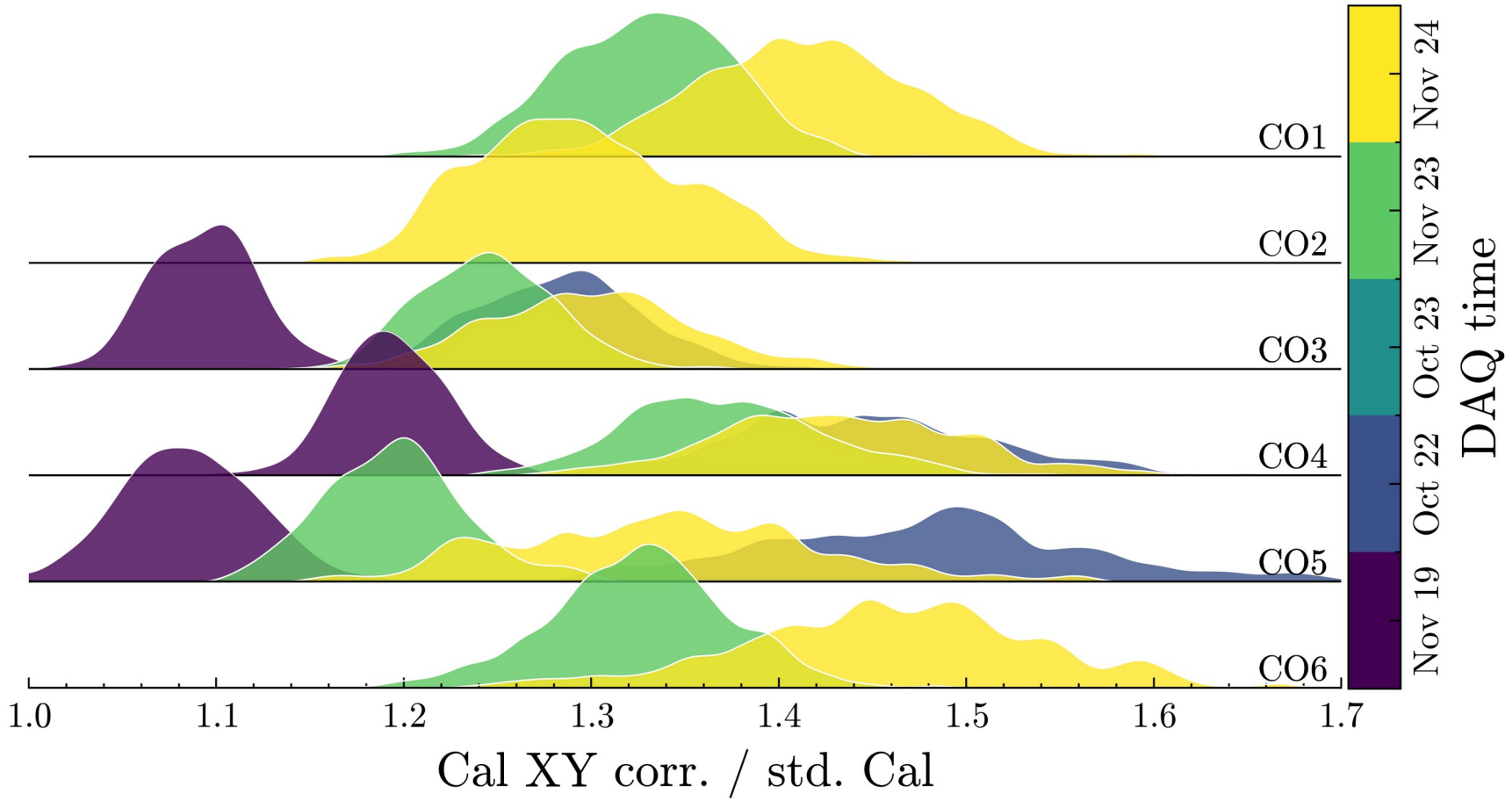

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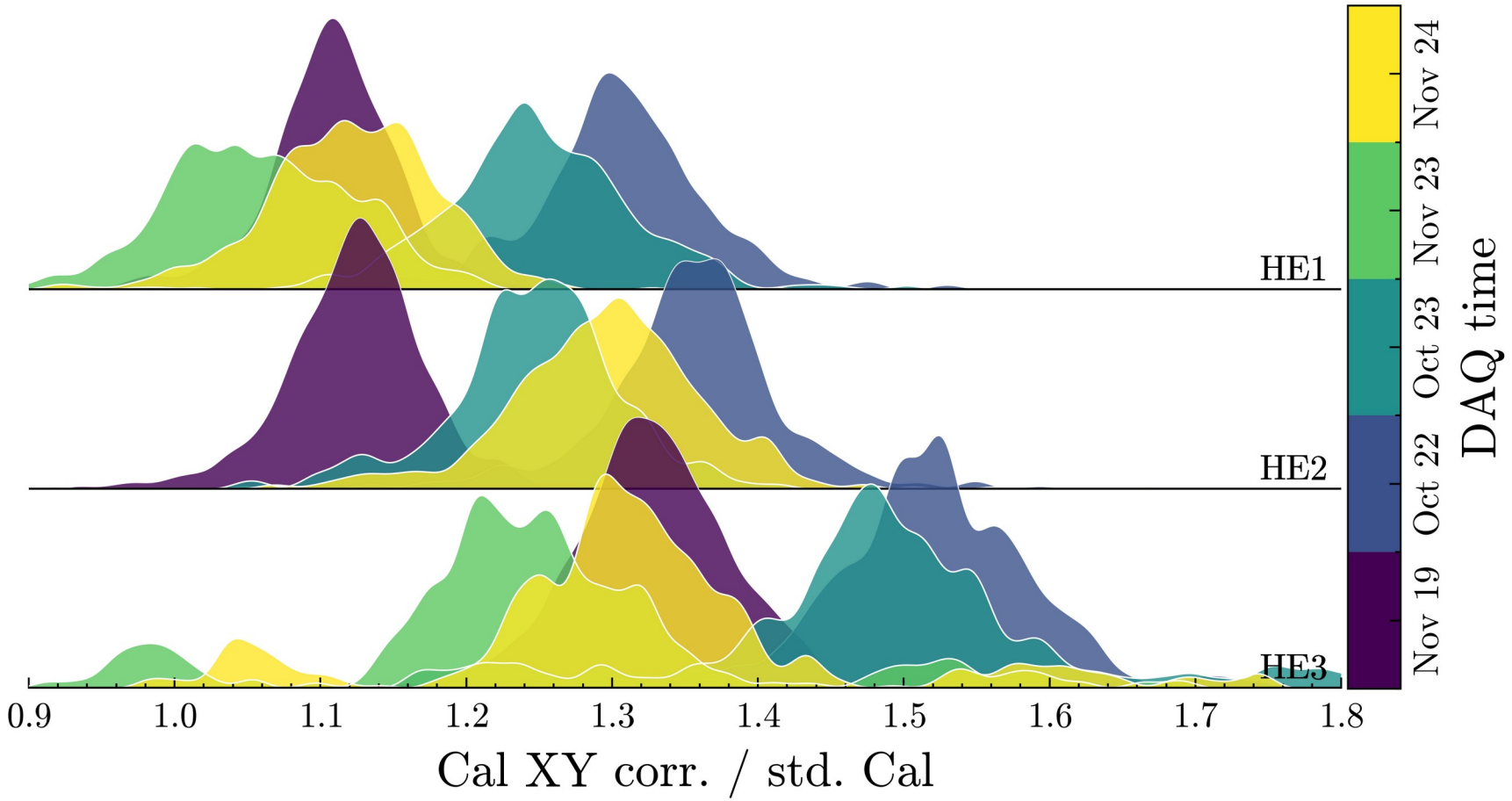

Backup