



CERN Beam Test 2026 Simulation

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04-30-2026

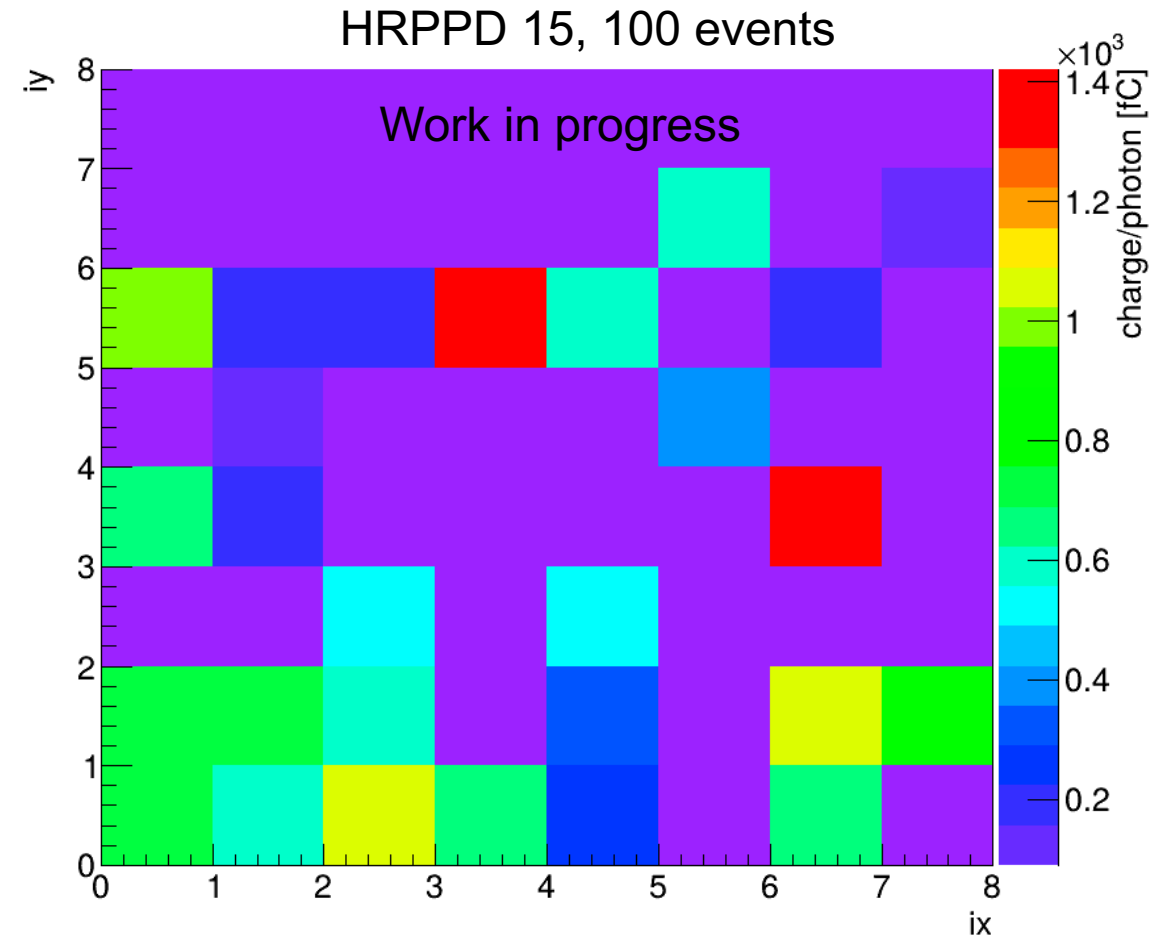


To-do list

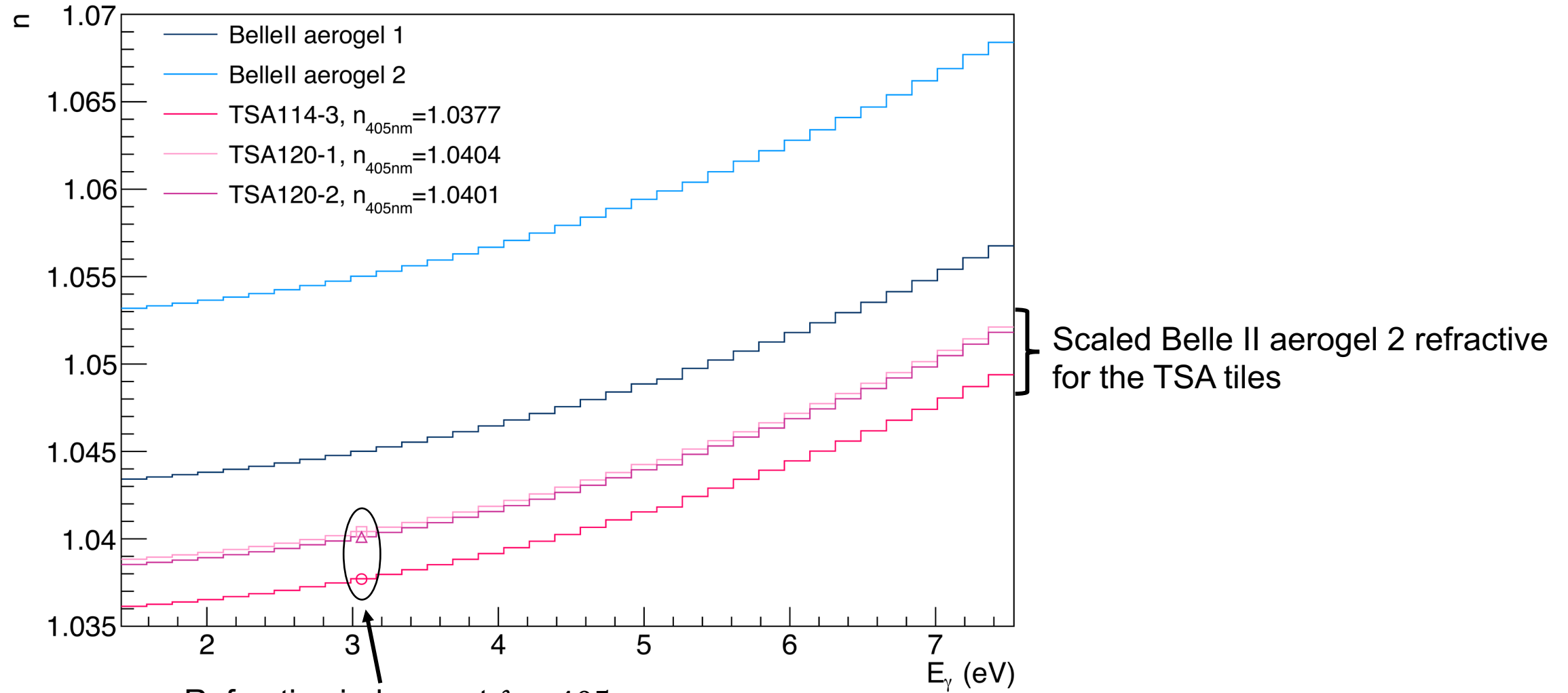
	Hardware measurements	Simulation update	Time scale
HRPPD	<input type="checkbox"/> QE uniformity ✓HRPPD 15 ✓HRPPD 16 ✓HRPPD 17 <input type="checkbox"/> HRPPD 23 (at Incom) <input type="checkbox"/> HRPPD 27		By May ?? (4.5 hours per QE scan. Maximum two HRPPDs per day)
	<input type="checkbox"/> Gain uniformity analysis pipeline		
		<input type="checkbox"/> Implement updated $QE(\lambda)$ in simulation using photocurrent from Chandra (In progress)	By May 27 th
Aerogel		✓Thickness ✓Absorption length ✓Refractive index	
UV filter		Material definition (change from acrylic to borosilicate)	
	<input checked="" type="checkbox"/> Remeasure absorption length	<input type="checkbox"/> Absorption length	
Mirror		<input type="checkbox"/> Update mirror configuration and optical properties	
Beam spread		<input type="checkbox"/> Option for beam spread angle <input type="checkbox"/> Option for beam diameter	
Analysis macros		✓Hit maps <input type="checkbox"/> QA plots	
Large scale simulation		<input type="checkbox"/> Run script, condor script ✓Options for particle species (π , K), and momentum	

Update 1– Gain Uniformity (Work in progress)

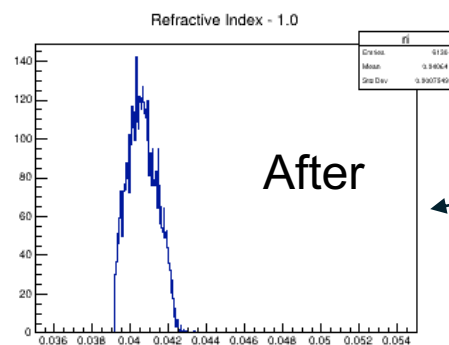
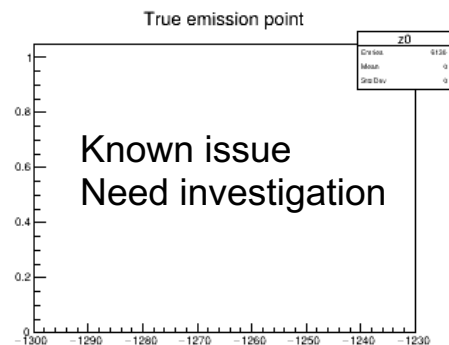
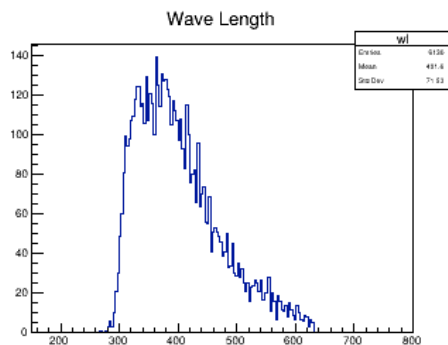
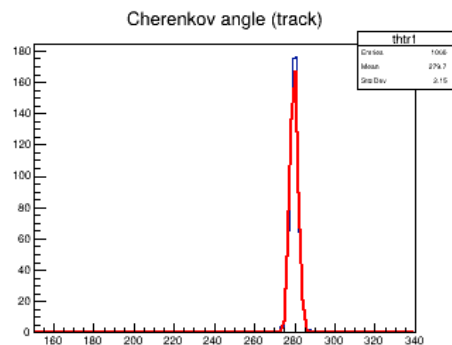
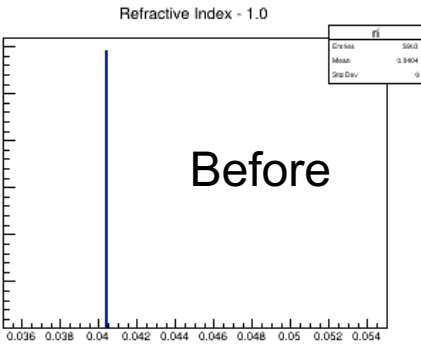
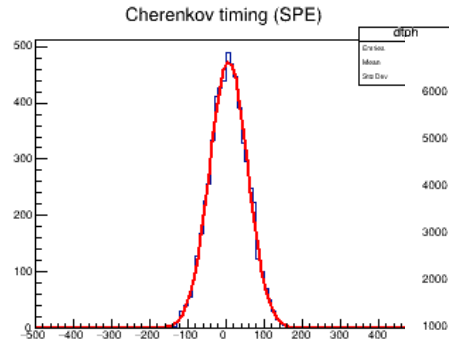
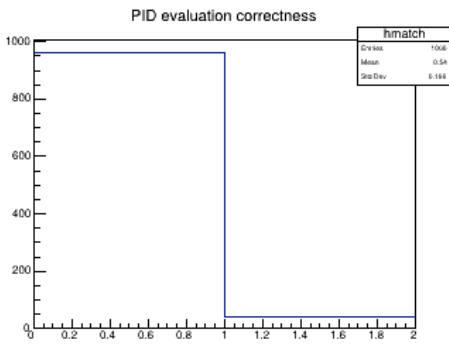
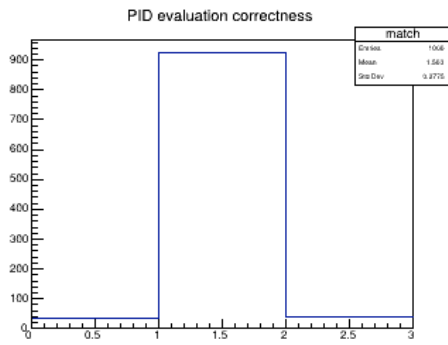
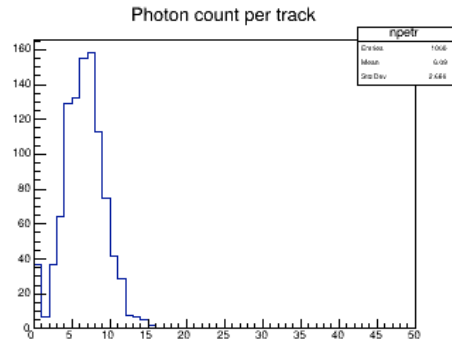
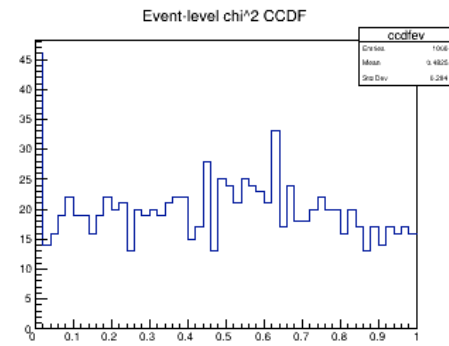
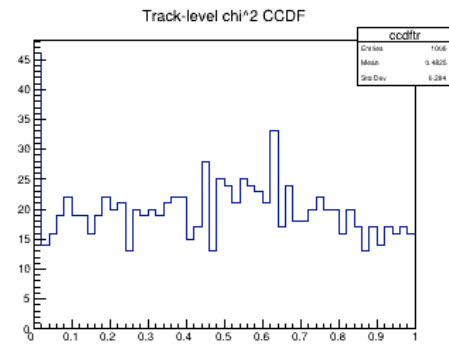
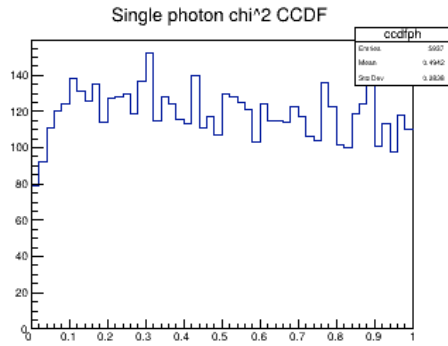
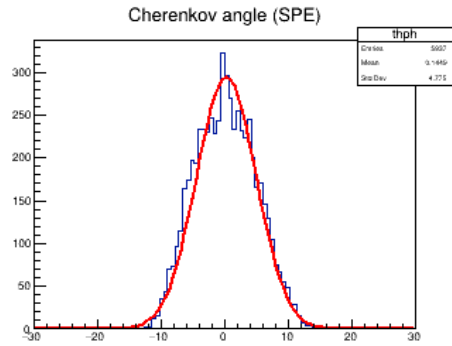
- Building a setup of gain uniformity measurement that can be replicated at CERN
- A quadrant-by-quadrant scan using a diffused LED light source, instead of a pixel-by-pixel scan using a laser source
- Ping job: develop a measurement and analysis pipeline



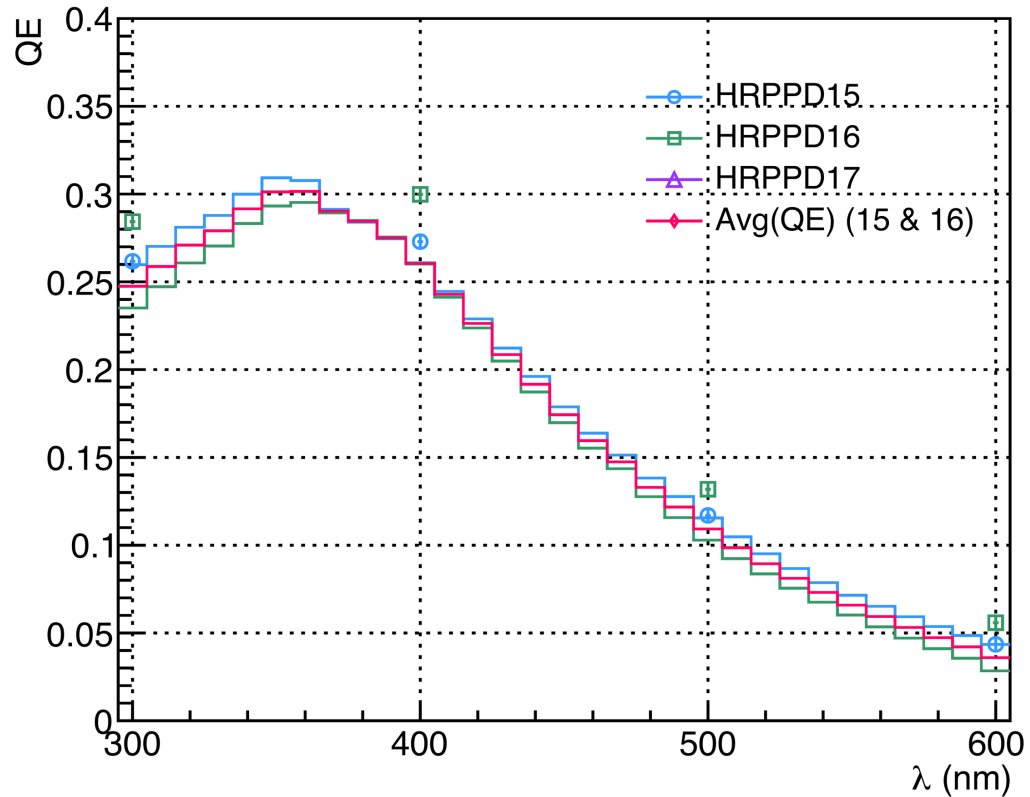
Update 2 – Aerogel Refractive Indexes



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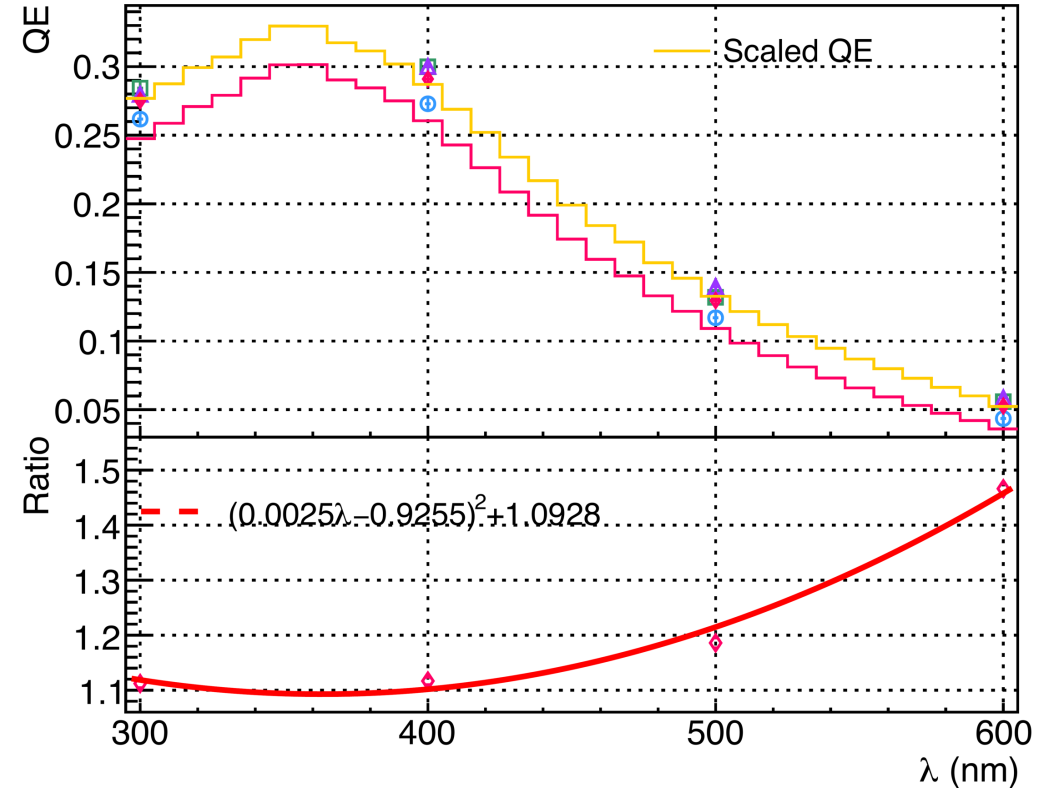
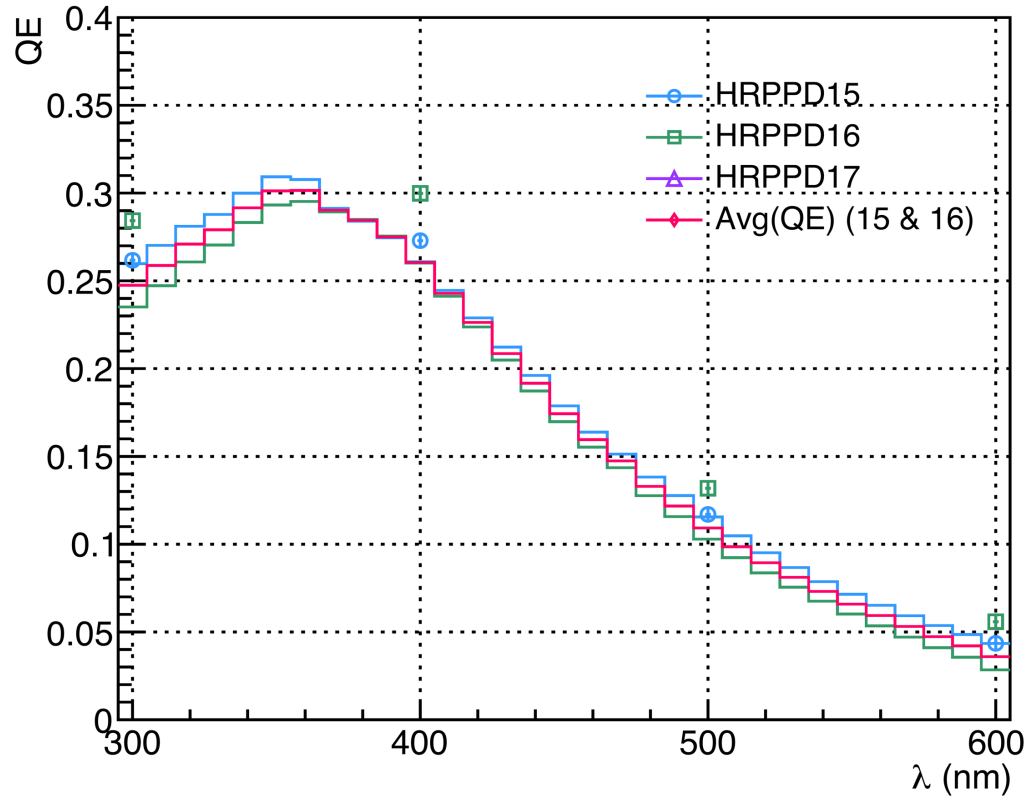


Update 3: HRPPDP QE vs Wavelength



- Lines: Chandra's measurements in July 2025
- Markers: Ping's uniformity measurements

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- Red markers: average over 3 HRPPD tiles
- Ratio: red markers/red curve
- Orange curve: red curve x ratio fit