

The future of AfkQed

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Liverpool, The Spine

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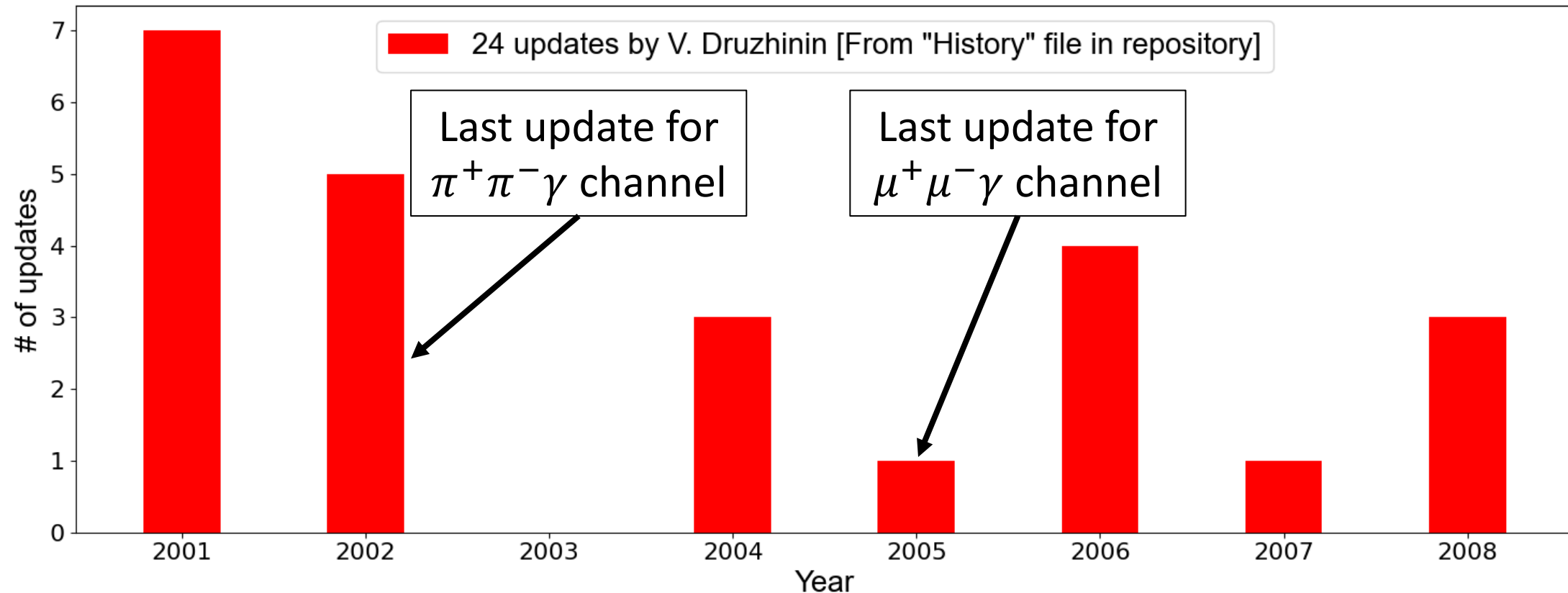


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The story so far: 2001-2023

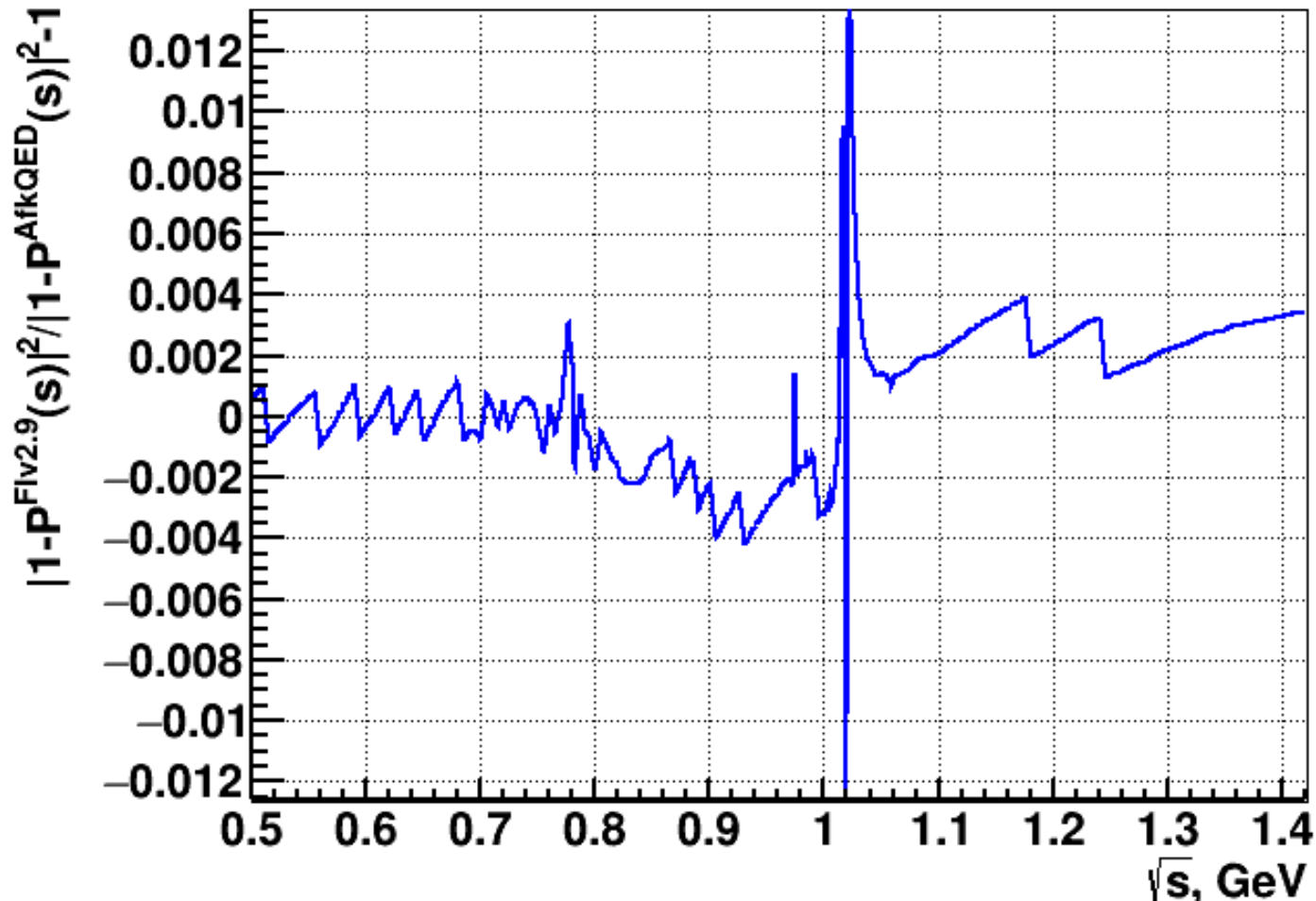
- AfkQed strongly inspired by EVA code, developed under V. Druzhinin and theorists in Novosibirsk
- Relevant channels: LO $2 \rightarrow 3$ (+additional ISR&FSR), $X \in \{\mu, \pi\}$



2024 major updates in RMCL2 GitLab

- March 14th: C++ standalone created, using STRONG2020 pion form factor. Only FORTRAN standalone existed before; code was within BABAR framework, first maintained at SLAC and now at Victoria University
- July 17th: NSK VP table implemented and made default
- July 31st – Aug 21st: added weights to address increase of amplitude at radiative return to J/Ψ mass (not a problem with previous VP)

New VP vs original VP in AfkQed code



- 0.4% inconsistency for $\sqrt{s} < 2$ GeV
- A bit higher (1%-2%) on ϕ -resonance

Summary

- We don't expect to improve AfkQed in any major way (LO \rightarrow NⁿLO order; F \times sQED \rightarrow full hadronic matrix elements; ...)
- All changes since 2008 were made to address specific needs of STRONG2020 \rightarrow there might be more
- Immediate future: maybe new plots for paper review stage, or minor documentation pushes to GitLab