

TOPONIUM: ANALYZING TOP QUARK BOUND STATES WITH CMS

Finn Labe for the DESY EXO group

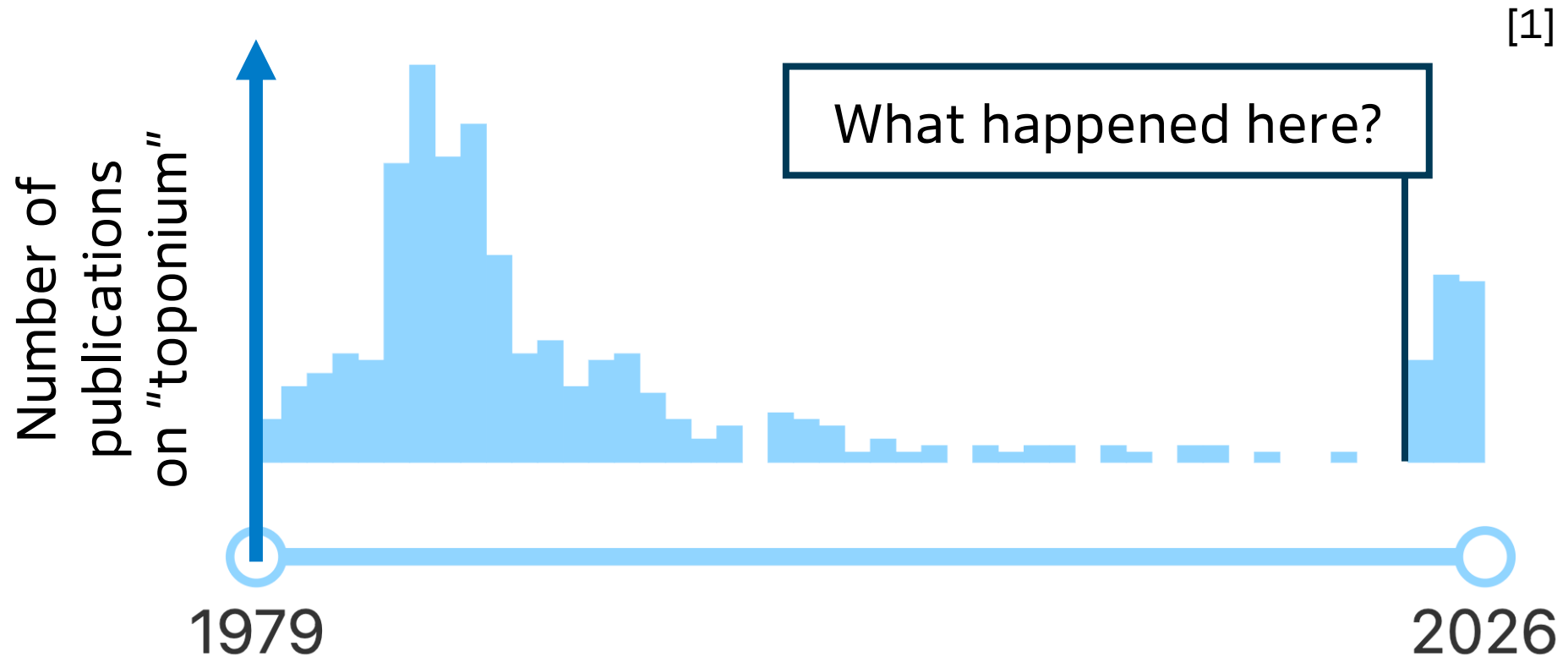
MU Days

20.10.2026

HELMHOLTZ



Toponium: Analyzing top quark bound states with CMS



[1] inspirehep.net search: "toponium"

Toponium: Analyzing top quark bound states with CMS

Top quark lifetime: $\sim 5 \cdot 10^{-25}$ s



Too short to form stable bound states!

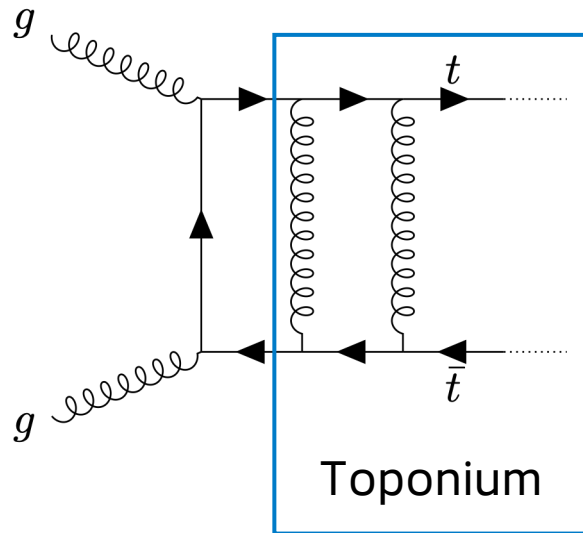
Toponium: Analyzing top quark bound states with CMS

quasi

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But: two top quarks can briefly orbit.



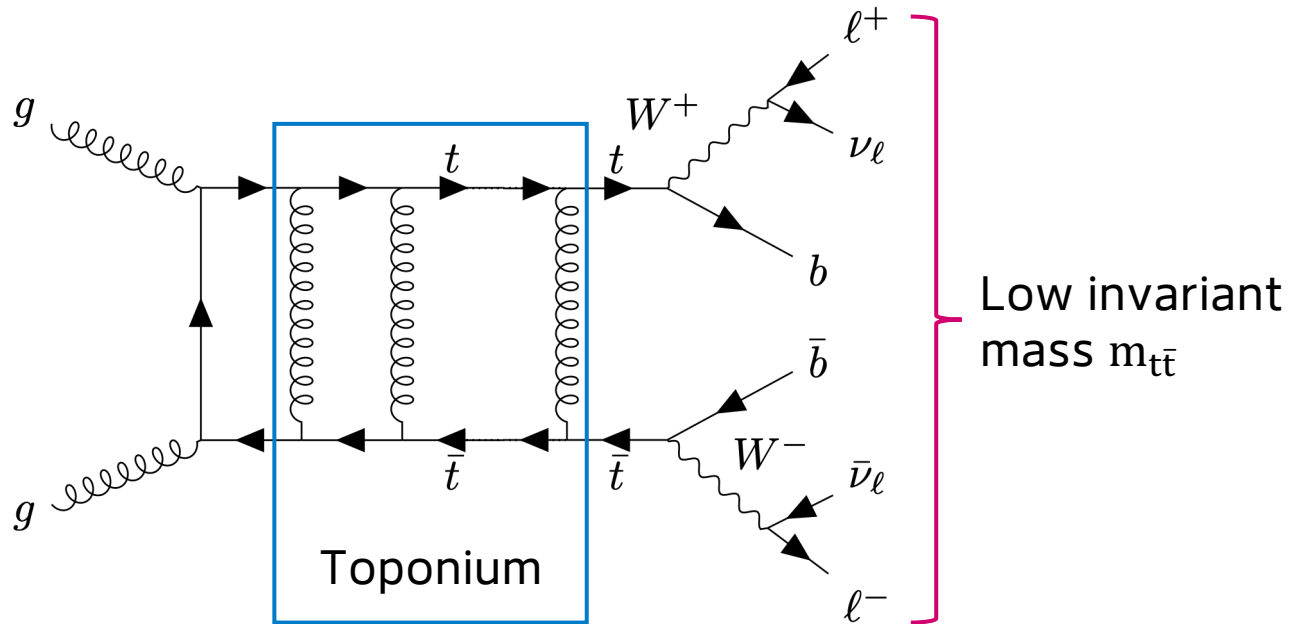
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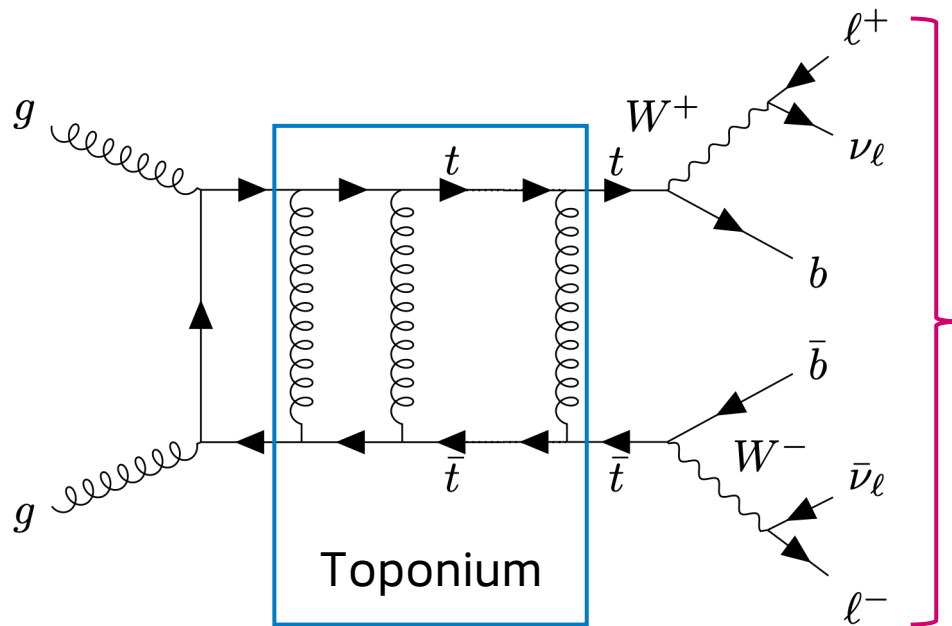


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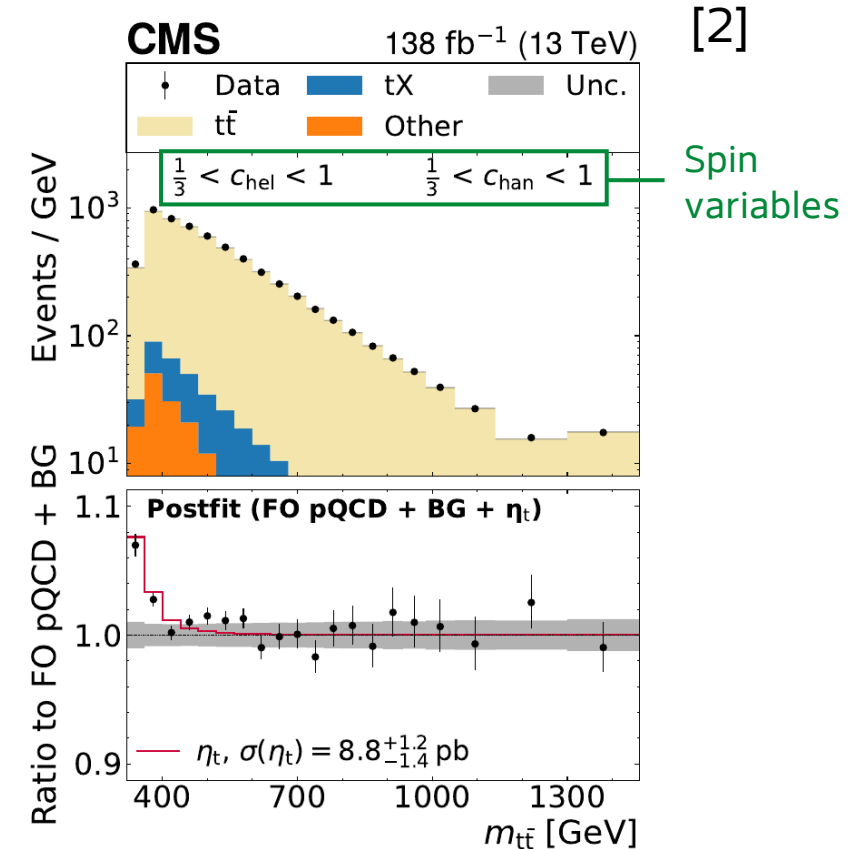


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Low invariant mass $m_{t\bar{t}}$

quasi

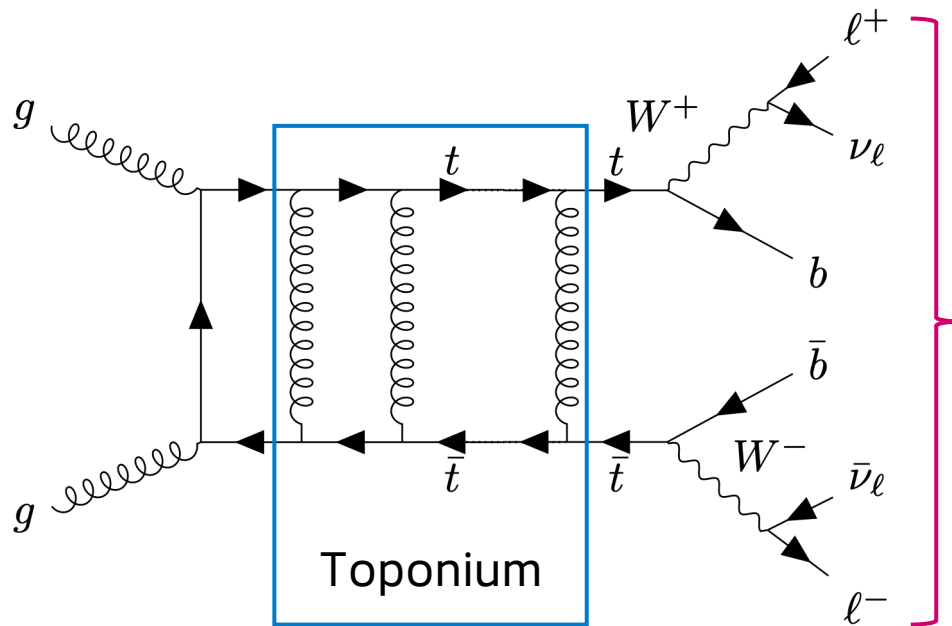


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