
Charm Meson Report:

PDG Collaboration Meeting 2008



David Asner (Carleton University)

(My) Introduction

- This is my first PDG Collaboration meeting
- Involved since 2002
 - First review of Charm Mixing
- Became an Encoder (Charm) in 2004
 - Replacing Pat Burchat
- Other affiliations
 - Spokesman of CLEO Collaboration
 - Heavy Flavor Averaging Group (HFAG)
 - charm and CP/UT subgroups
 - SuperB
 - ATLAS
 - RD42 (Diamond Detectors)

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- Significant input from HFAG - charm subgroup
- 29 new papers from
 - CLEO(10), BaBar(9), Belle(3), FOCUS(4), BES(1), CDF(1), D0(1)

Subdivide by Physics

- D mixing - BaBar (3), Belle (2), CDF(1)
- Branching Fractions
 - Hadronic - CLEO (4), BaBar(1), FOCUS(1)
 - (semi)-Leptonic - CLEO (5), BaBar (3), BES (1)
 - Rare - D0 (1)
- Dalitz Plots - FOCUS(3) BaBar(1) CLEO (1)
- Excited $D^*(s)$ - BaBar(1), Belle(1)

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- Dalitz Plot Analysis Formalism (Asner)
 - Last update in 2006

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 - Belle (Schwatz, Golob, Mizuk)
 - CLEO (Asner, Cassel, Gibbons)
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 - Active participation wanted/needed
- Range of charm topics discussed at (nearly) biweekly meetings
 - D mixing (Schwartz, Golob, Asner)
 - D CP Violation (Pedrini)
 - Broad D^{**}'s & new D_{sJ} States (Golob)
 - Semileptonic Decays (Gibbons, Purohit)
 - Decay Constants (Asner, Coleman, Cassel)
 - Hadronic BF (Gibbons)
 - Rare D decay modes (Casey)
 - Charm Production Fragmentation (Casey)
 - Charm Baryon Properties (Mizuk, Golob)
 - D* Properties (Purohit)

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- HFAG makes averages for both scenarios

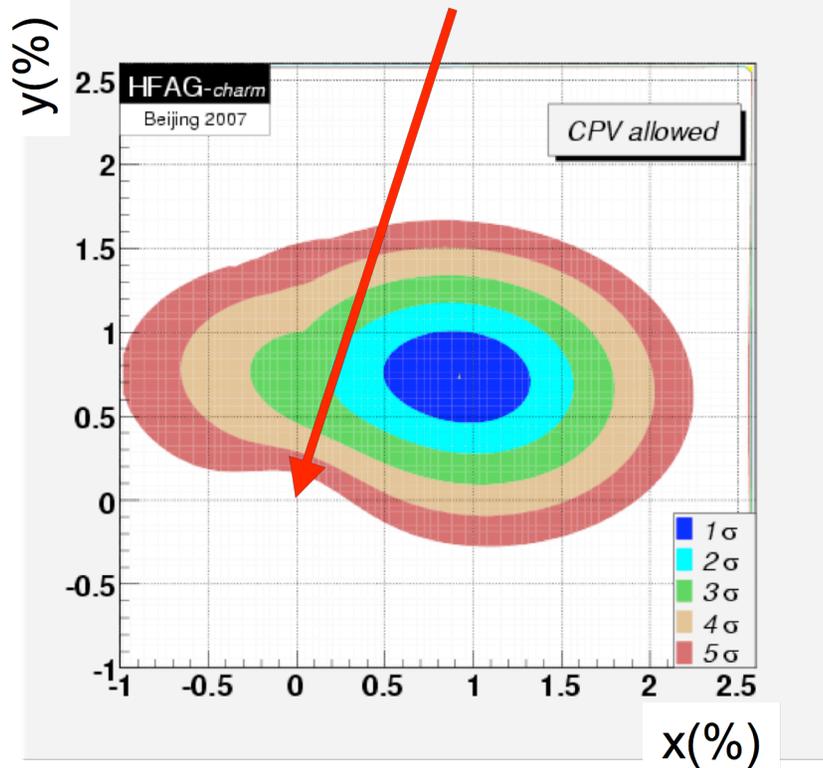
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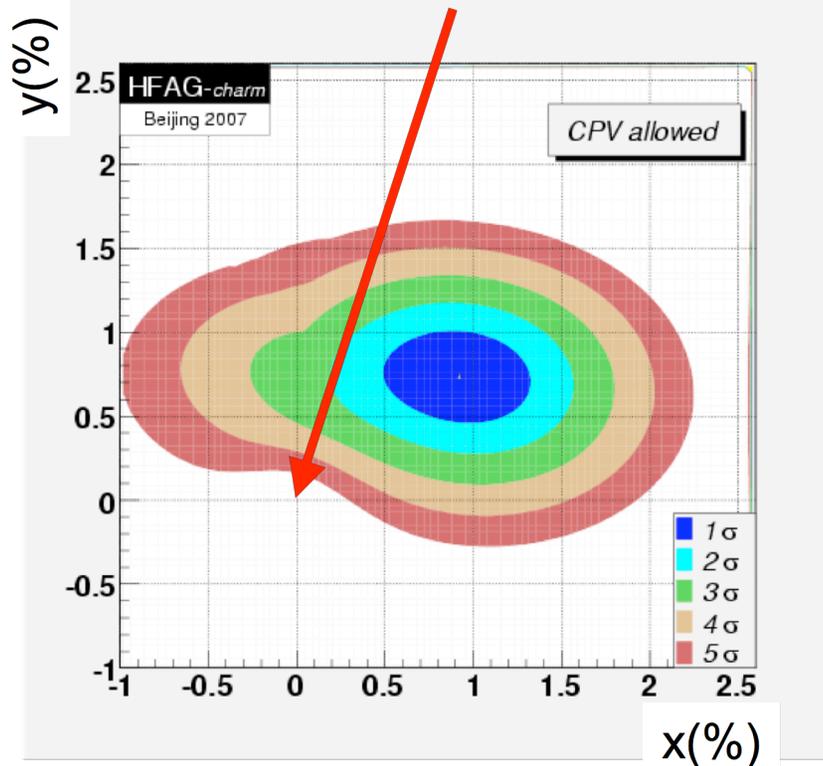
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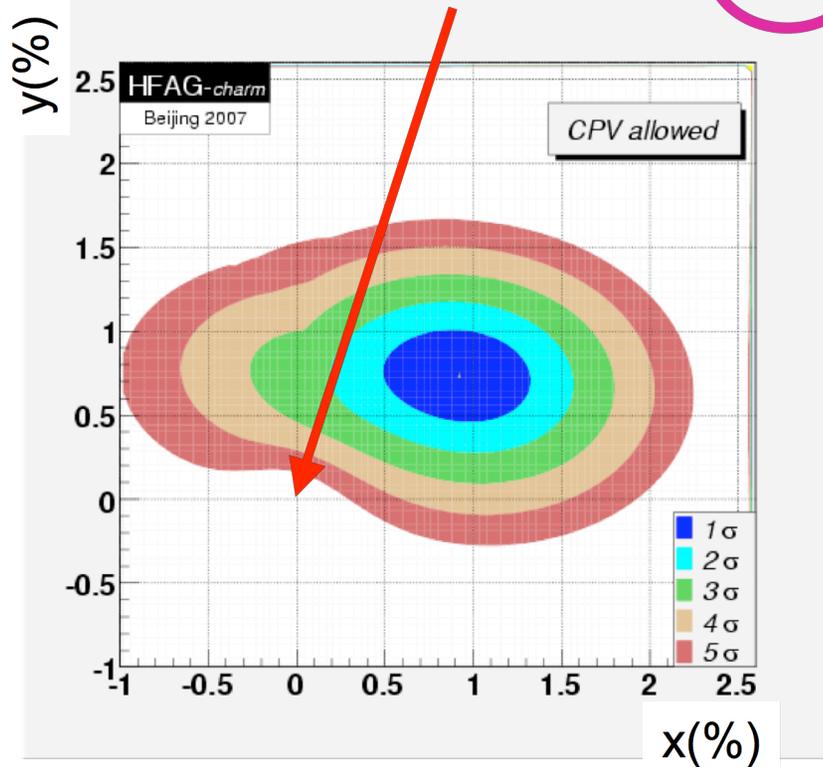


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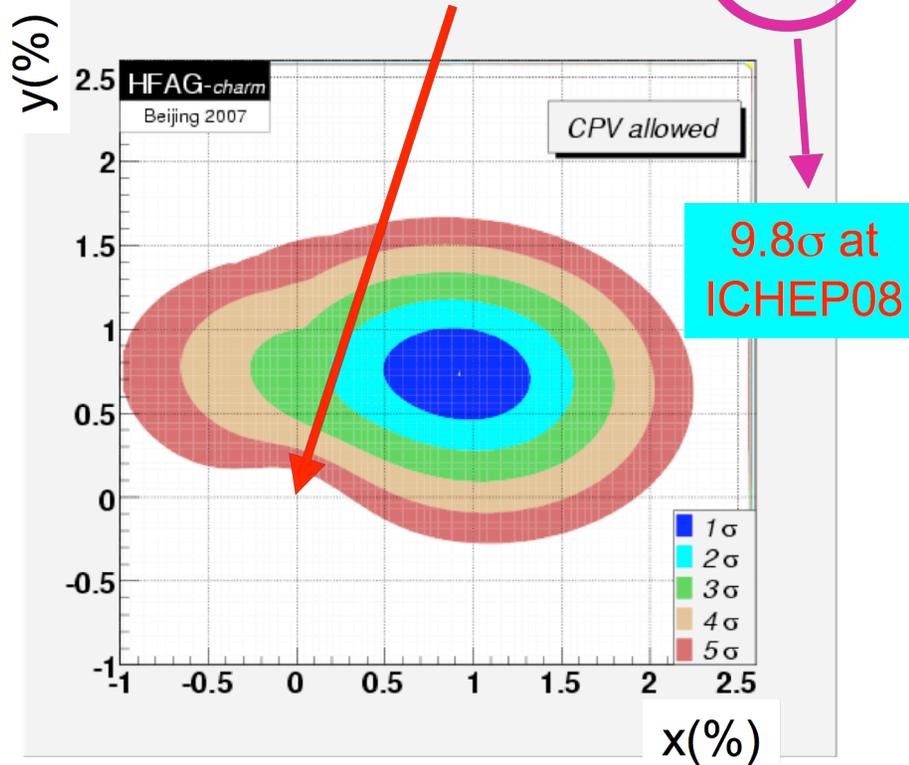


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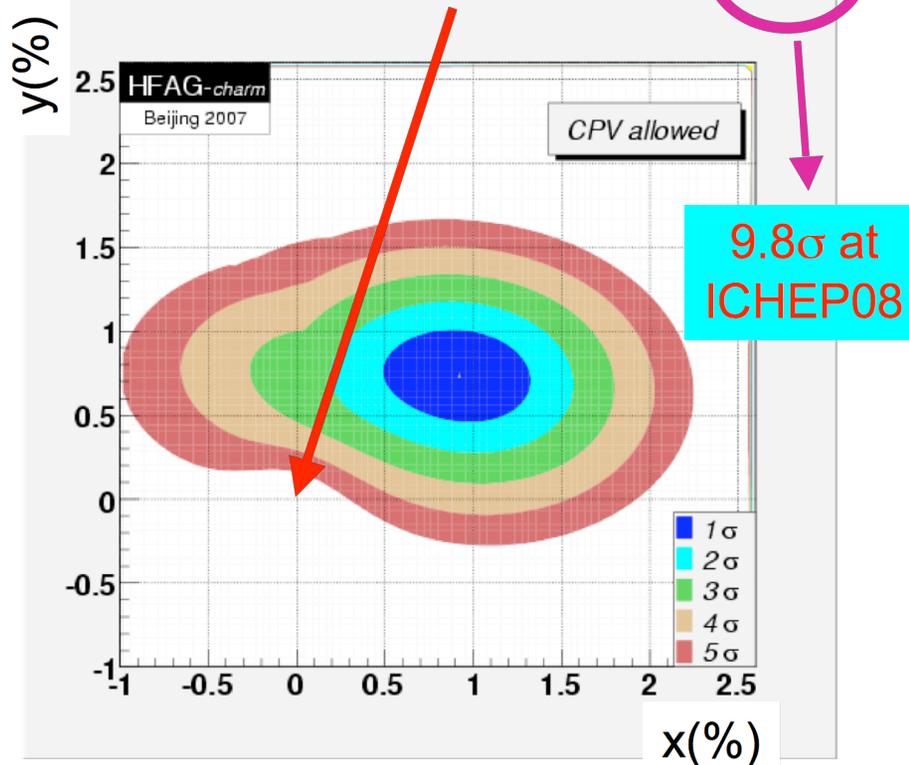
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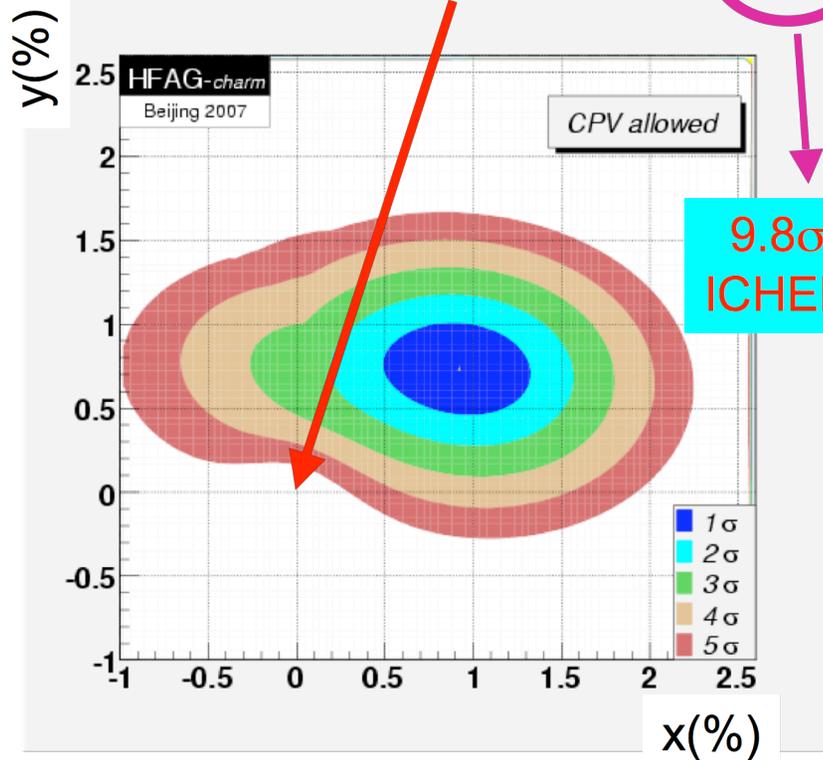
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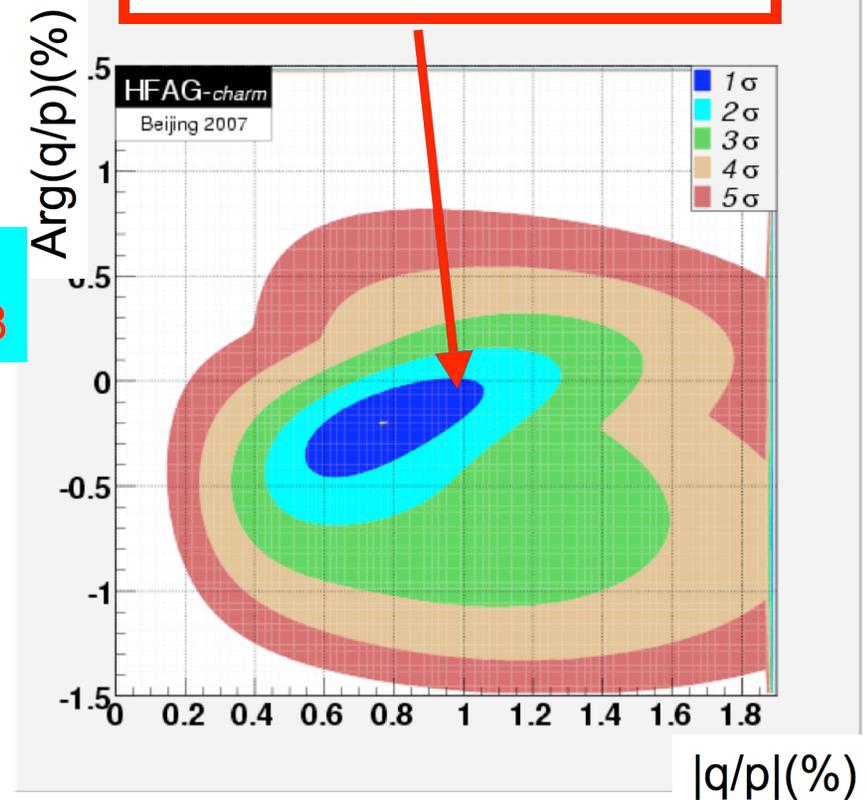
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$$|q/p| = 0.86 \pm_{0.15}^{0.18}$$

$$\text{Arg}(q/p) = (-9.6 \pm_{9.5}^{8.4})^\circ$$

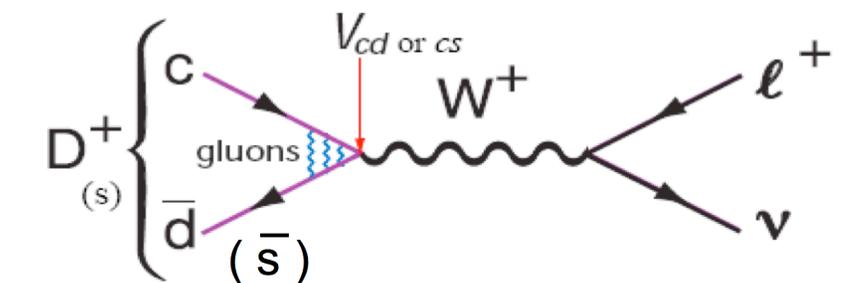
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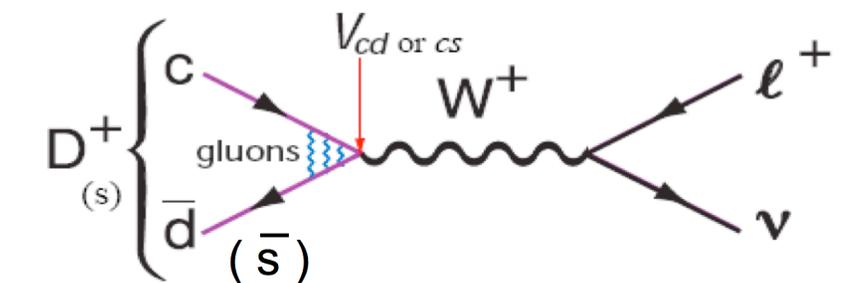
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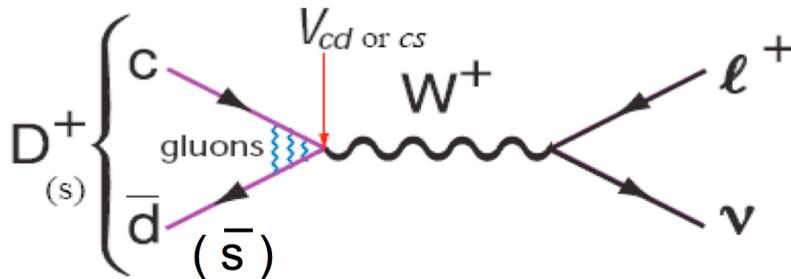
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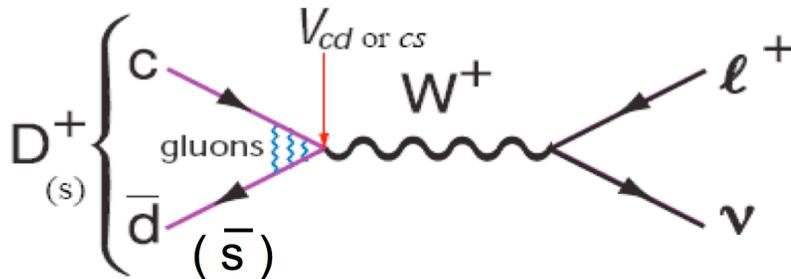


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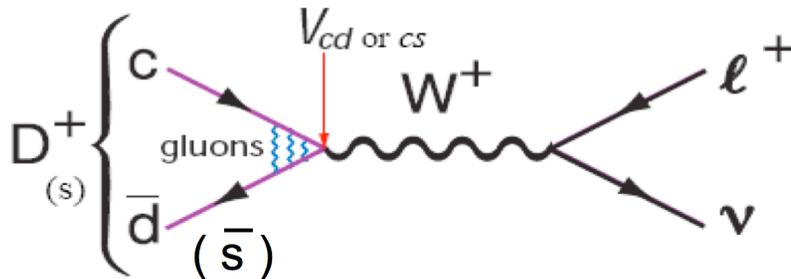
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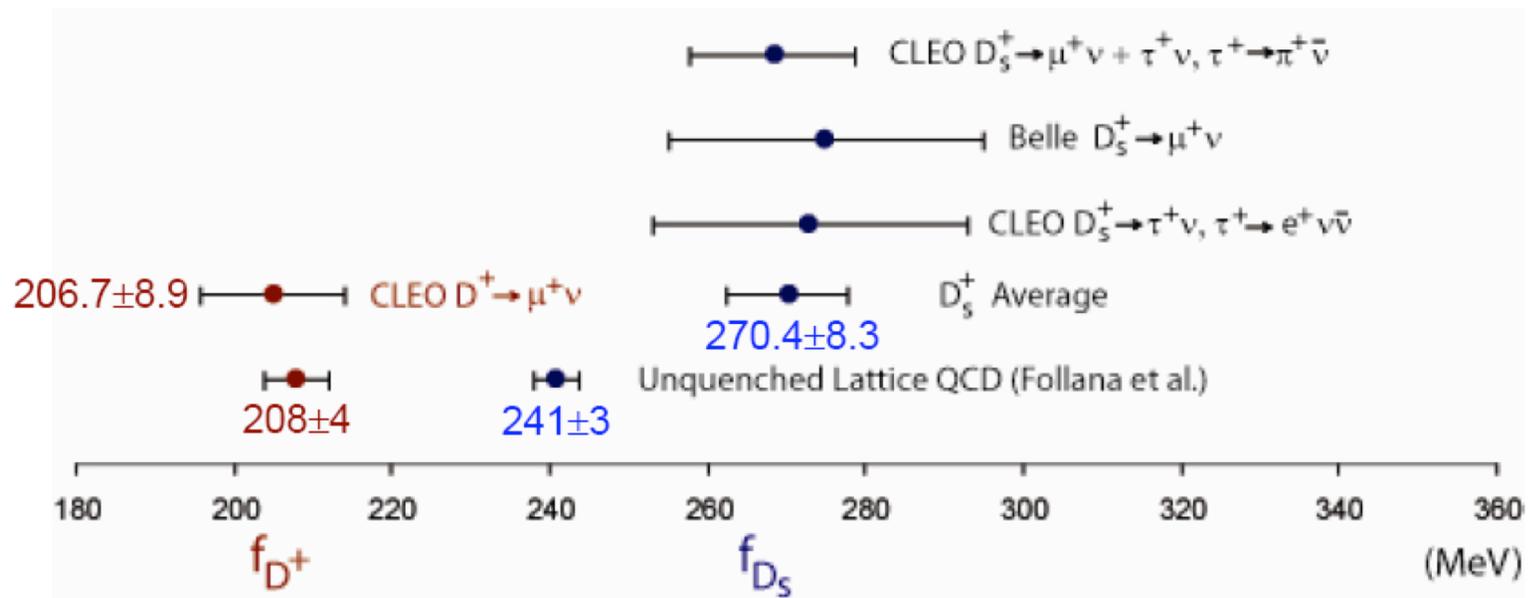
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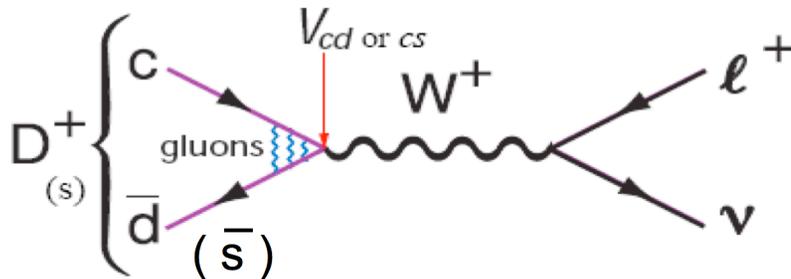
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206.7 ± 8.9 CLEO $D^+ \rightarrow \mu^+ \nu$

208 ± 4

f_{D^+}

241 ± 3

CLEO $D_s^+ \rightarrow \mu^+ \nu + \tau^+ \nu, \tau^+ \rightarrow \pi^+ \bar{\nu}$

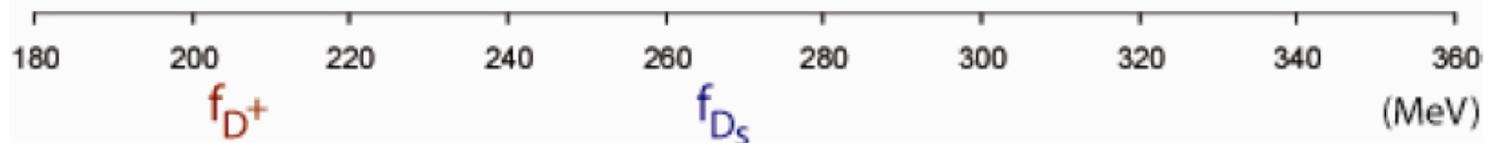
Belle $D_s^+ \rightarrow \mu^+ \nu$

CLEO $D_s^+ \rightarrow \tau^+ \nu, \tau^+ \rightarrow e^+ \bar{\nu}$

D_s^+ Average

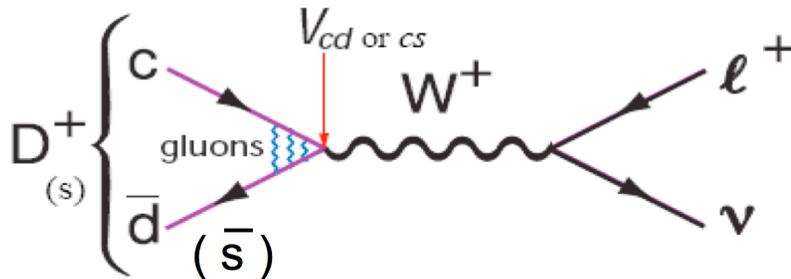
270.4 ± 8.3

Unquenched Lattice QCD (Follana et al.)



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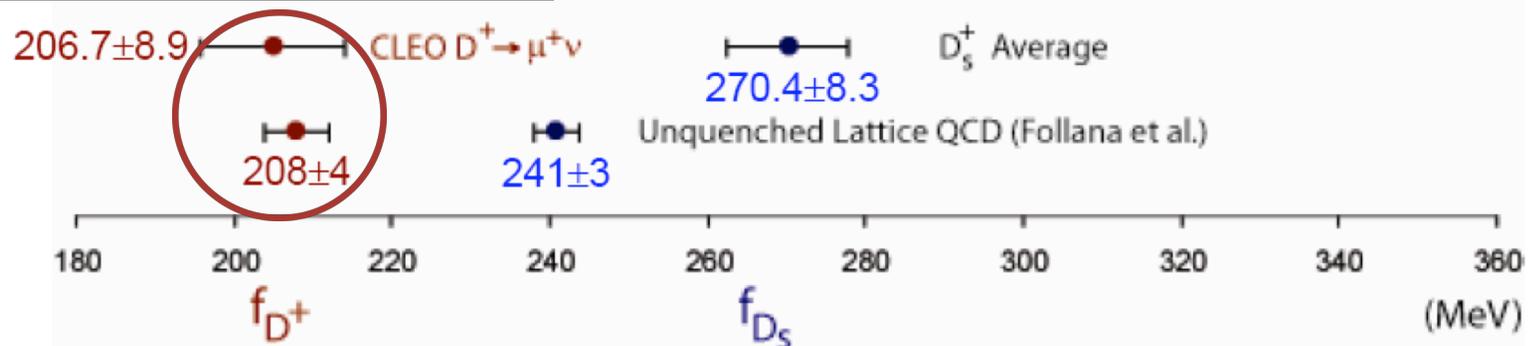


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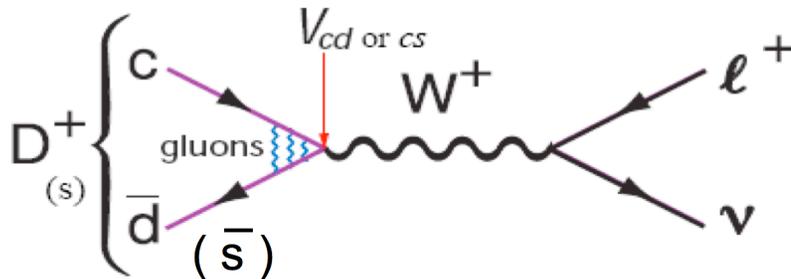
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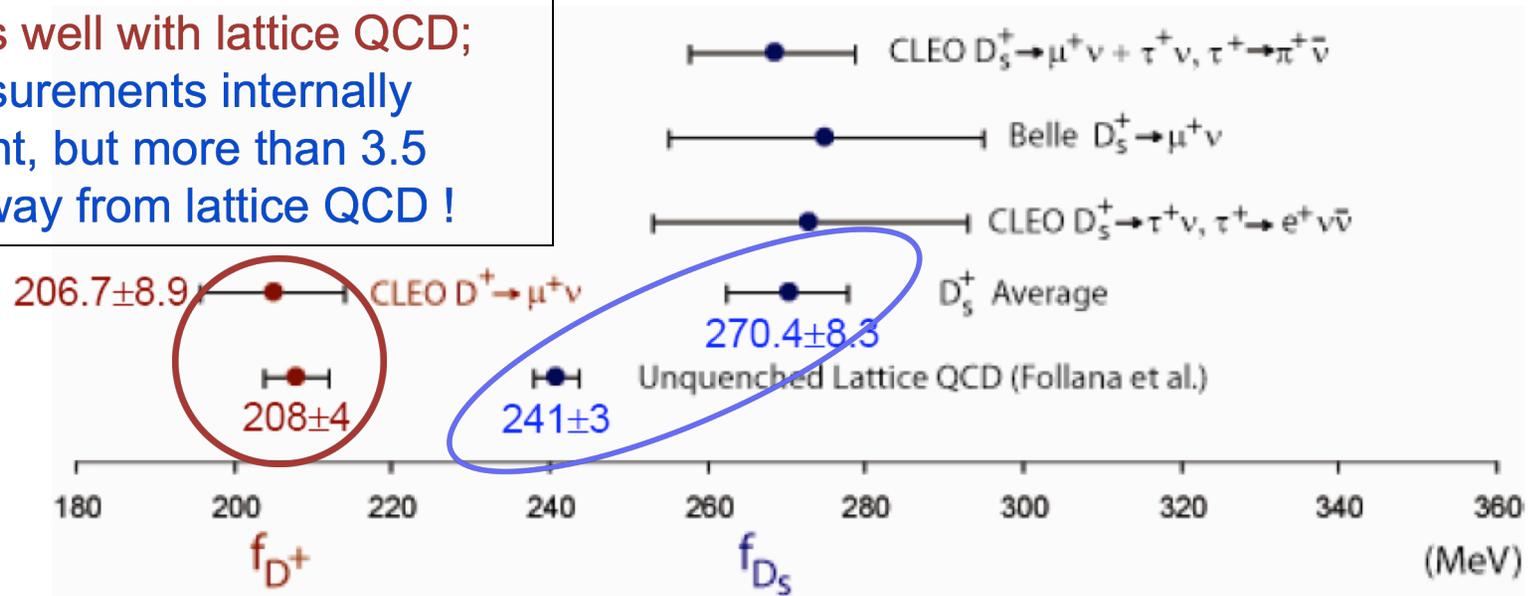


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- Anticipate several publications on all of these subjects from
 - CLEO, BaBar, Belle, CDF, D0, **LHCb and BESIII**

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