

# Asymptotic safety of gravity-matter systems

Mathieu Kaltschmidt

Institute for Theoretical Physics  
Heidelberg University

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- Search for pentaquark states
- decay channel

$$\lambda_b \rightarrow \lambda_c D_0 K^- \quad (1)$$

- three possible intermediate states

- $\lambda_b \rightarrow D_0^{(*)} (\sigma_c^0 \rightarrow \lambda_c K^-)$
- $\lambda_b \rightarrow \lambda_c (D_s^{0, (*)} \rightarrow D_0^{(*)} K^-)$
- $\lambda_b \rightarrow K^- (P_C \rightarrow D_0^{(*)} \lambda_c)$

- invariant mass of three decay particles:

- missing mass due to excited state of  $D_0$
- full decay channel  $\lambda_b \rightarrow \lambda_c (D_0^* \rightarrow D_0 \pi_0/\gamma) K^-$
- reconstruct  $D_0^* \rightarrow D_0 \pi_0/\gamma$  from observed  $D_0$

- Truncation [3]

$$\Gamma_k = \Gamma_{\text{EH}} + \mathcal{S}_{\text{gf}} + \mathcal{S}_{\text{gh}} + \Gamma_{\text{matter}} \quad (2)$$

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