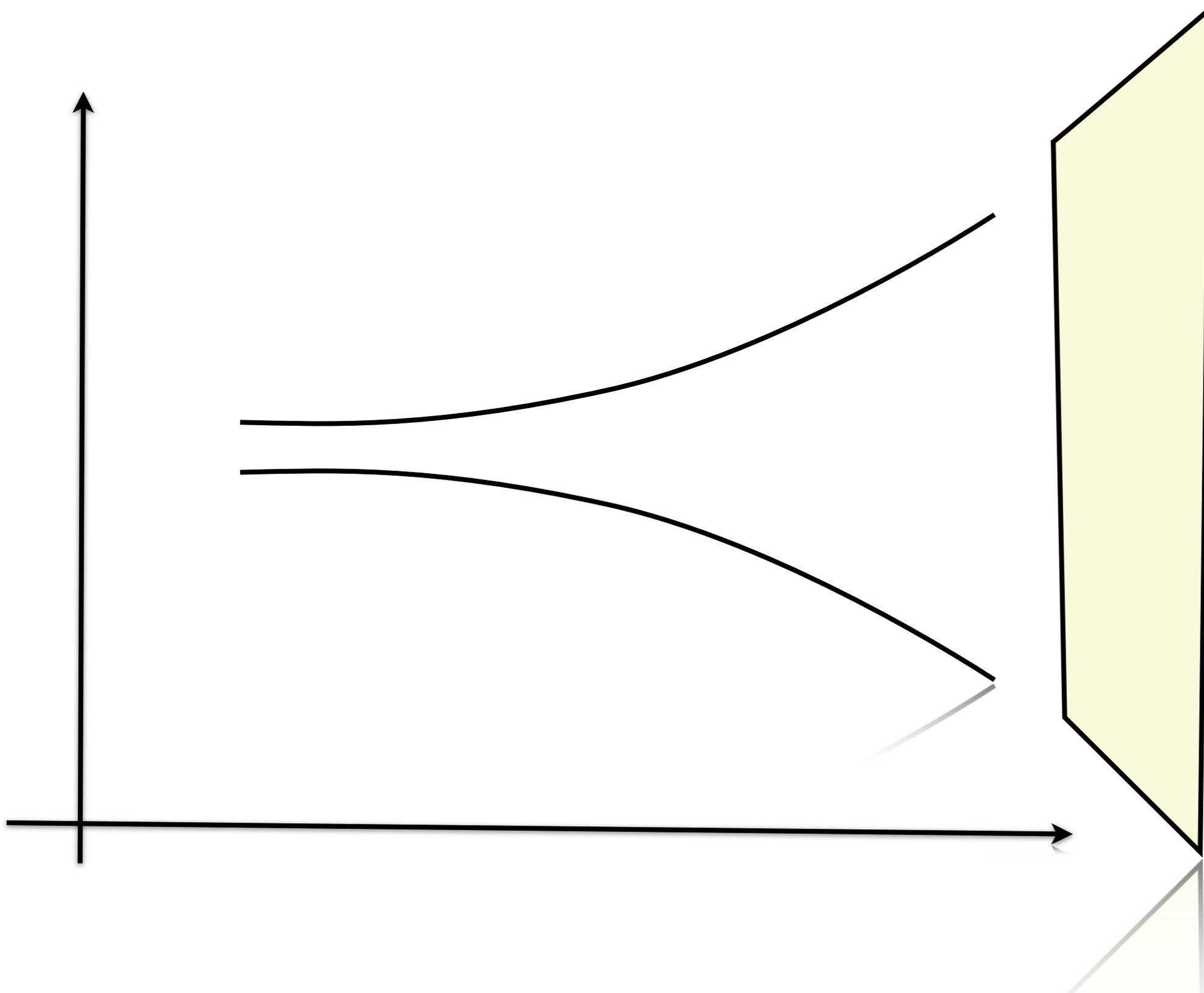
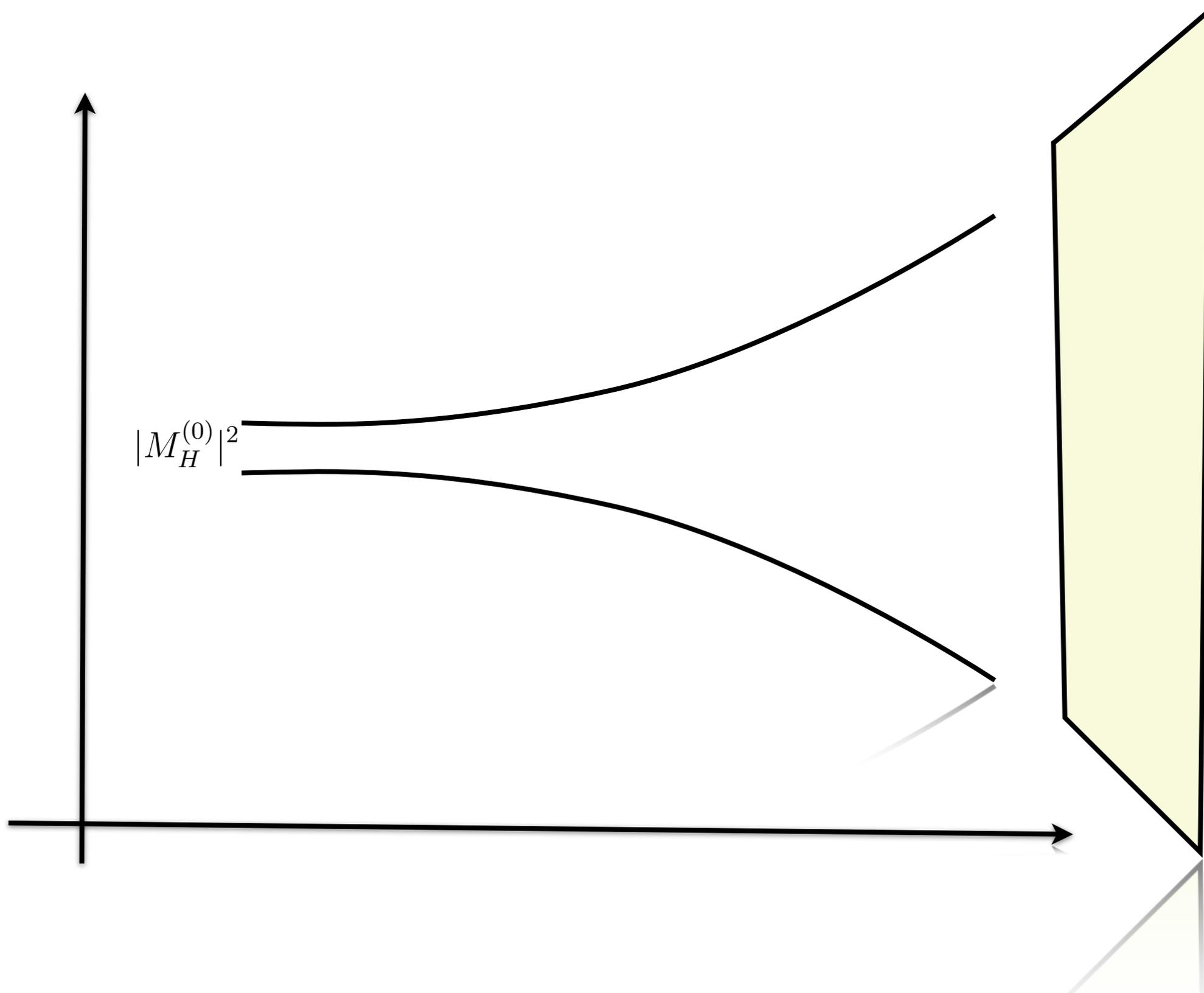


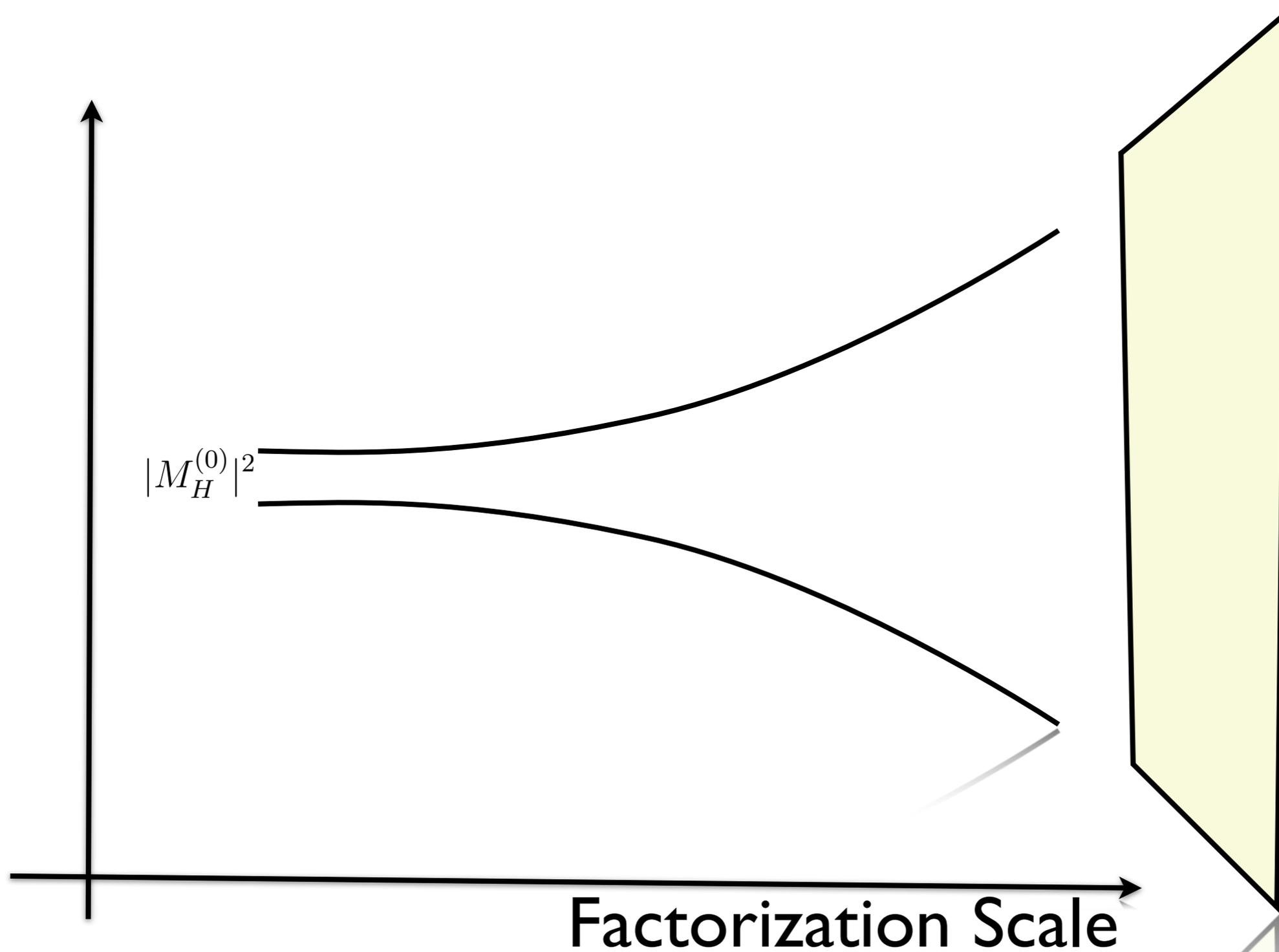
Peter Skands (QCD/Pheno)



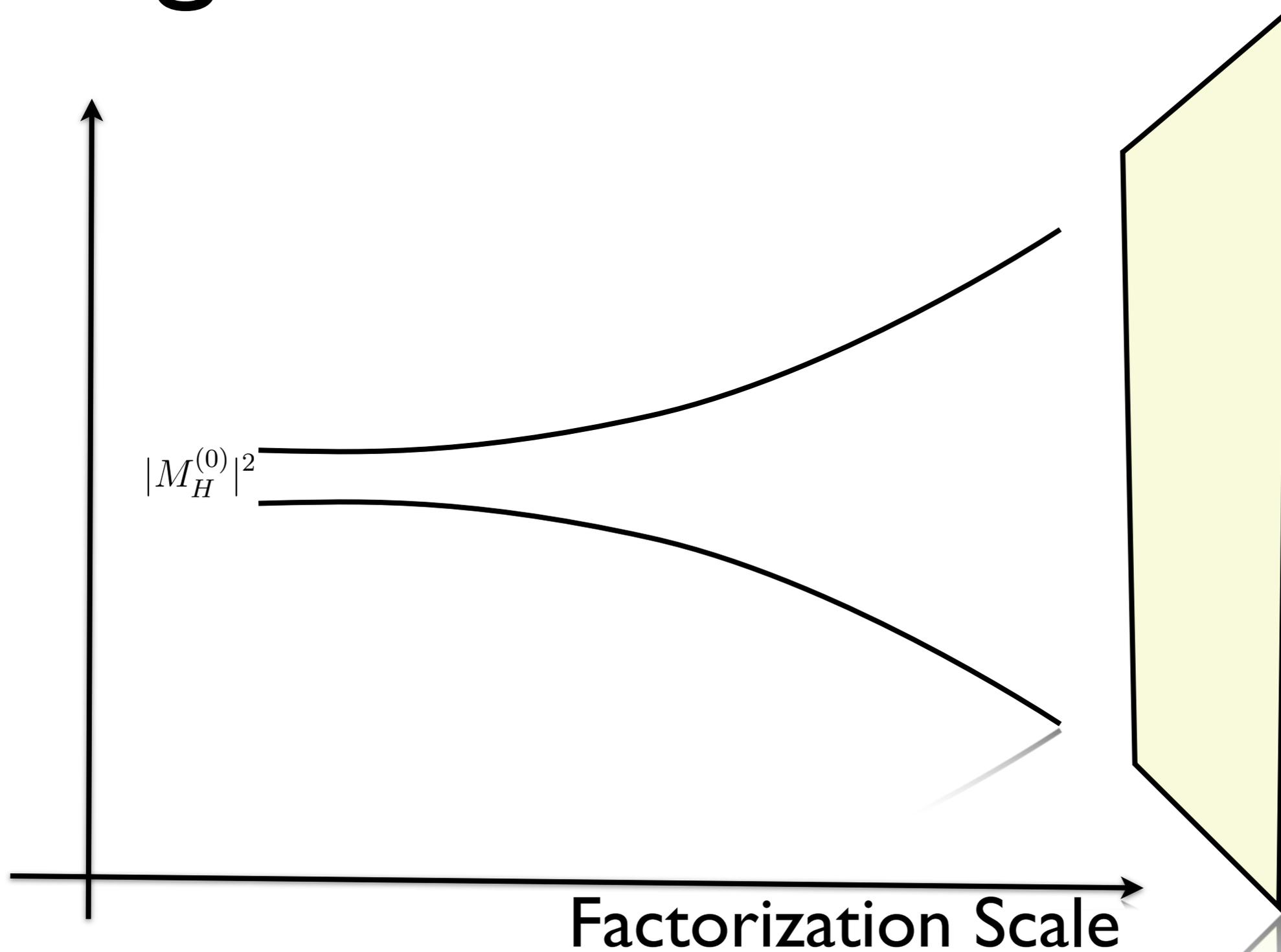
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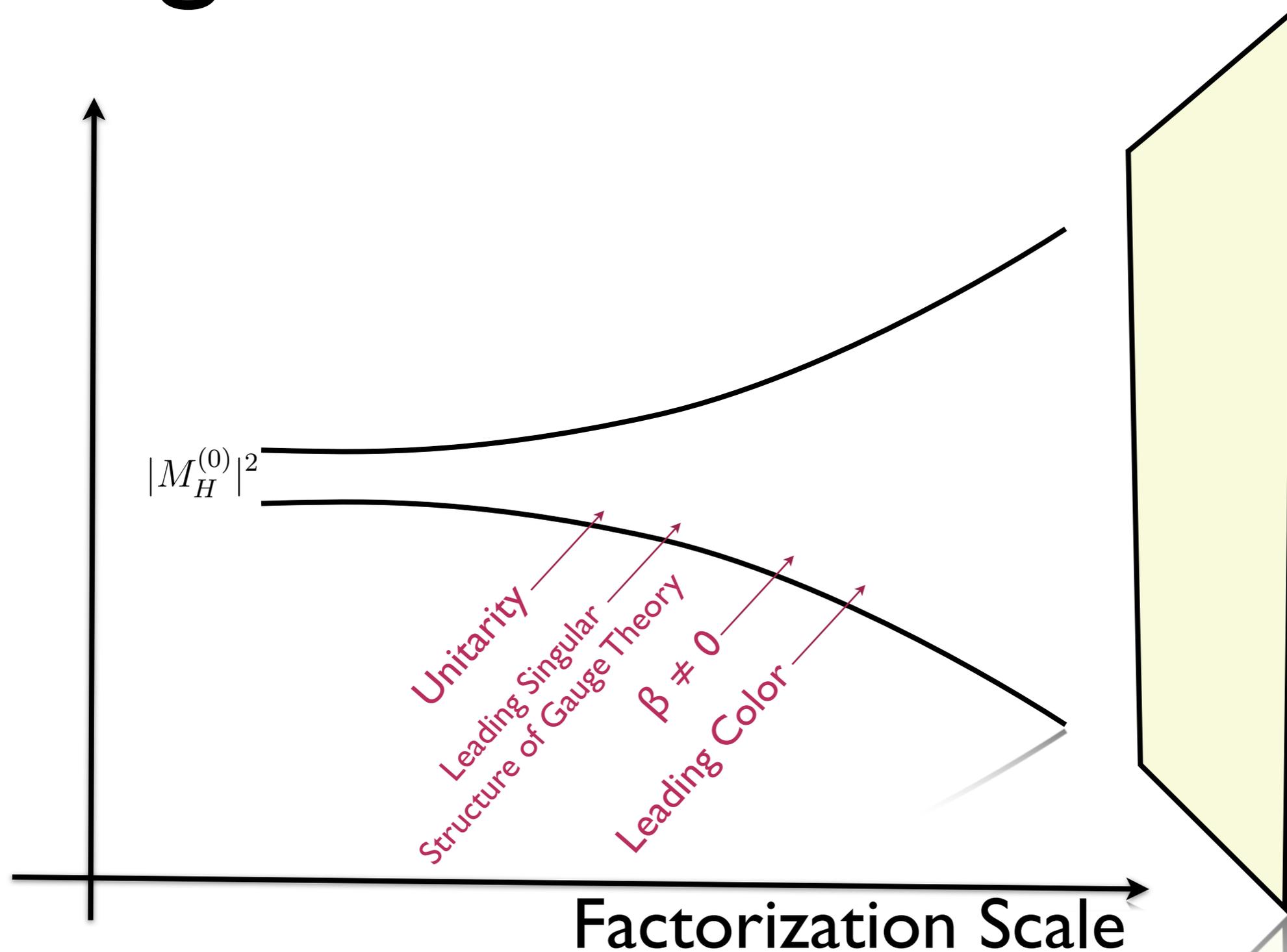
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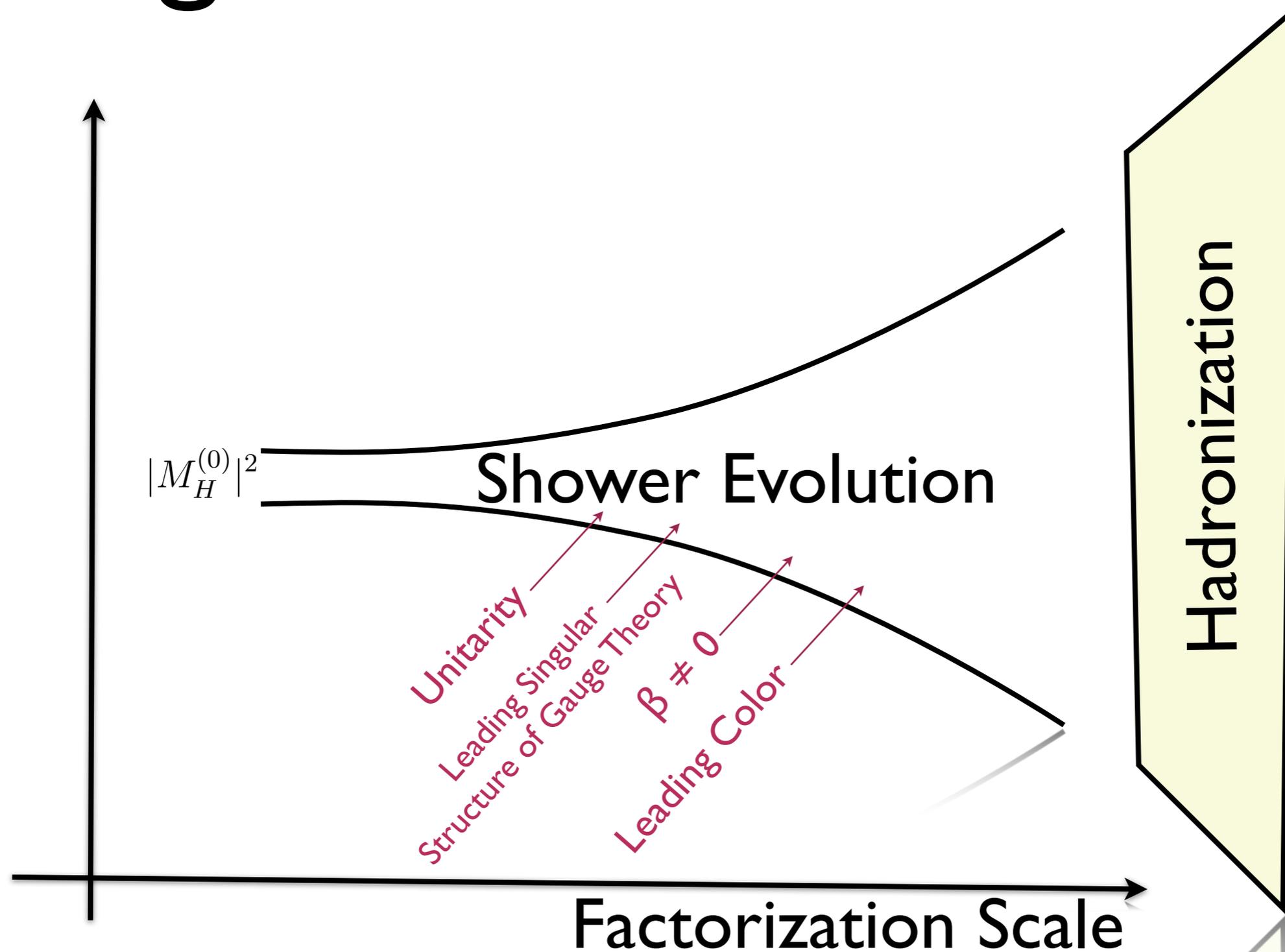
Higher-Order Corrections



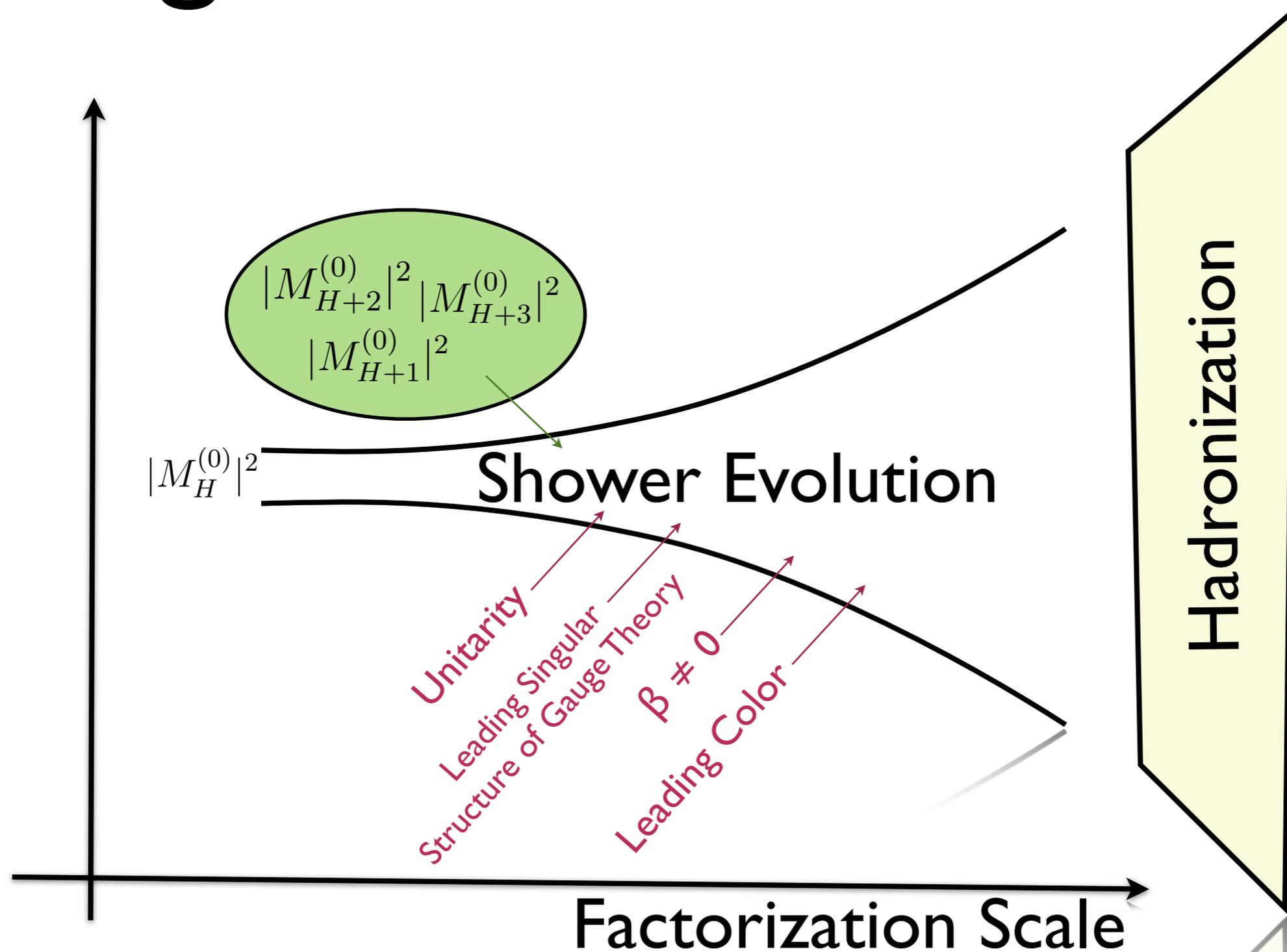
Higher-Order Corrections



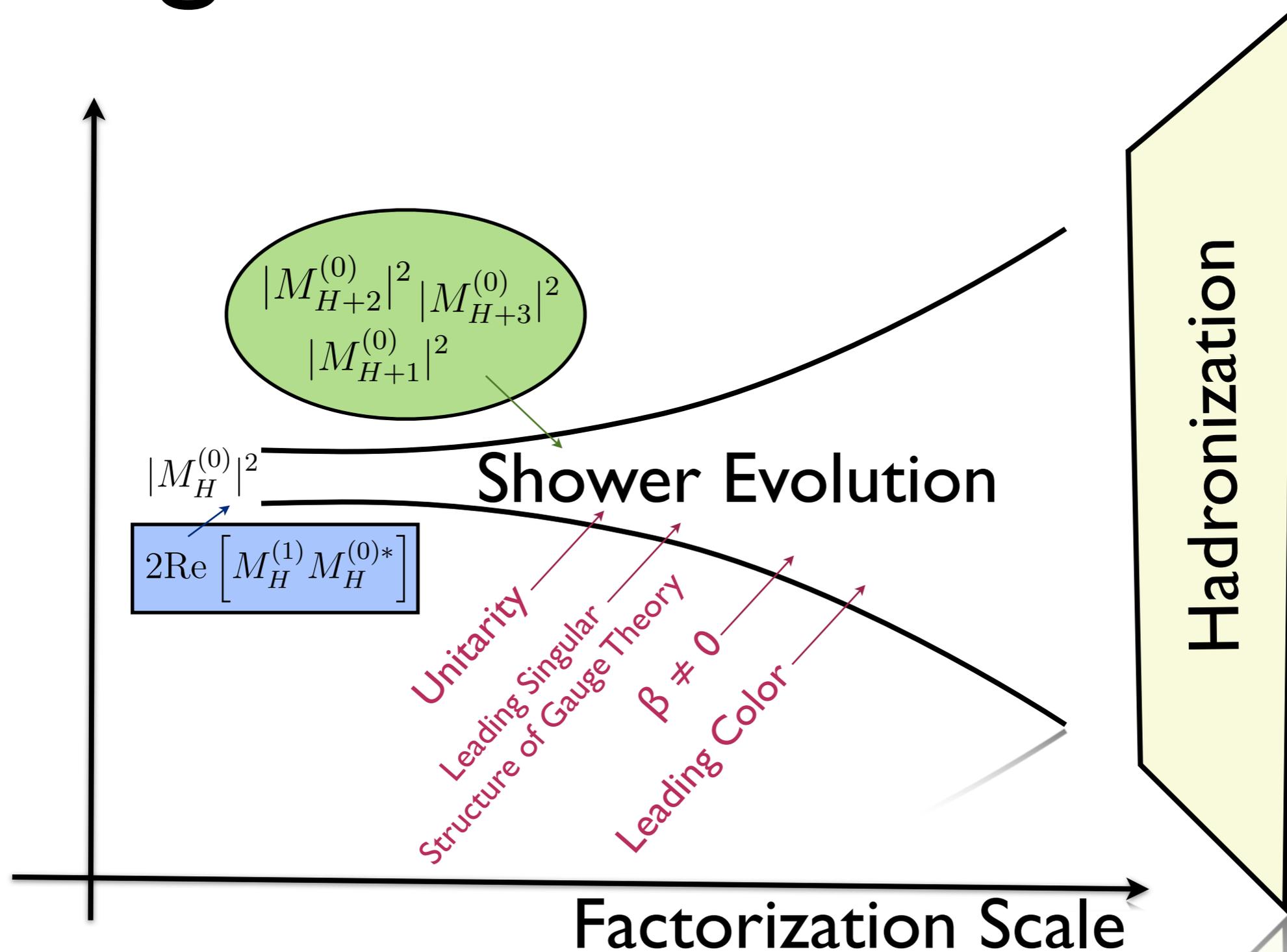
Higher-Order Corrections



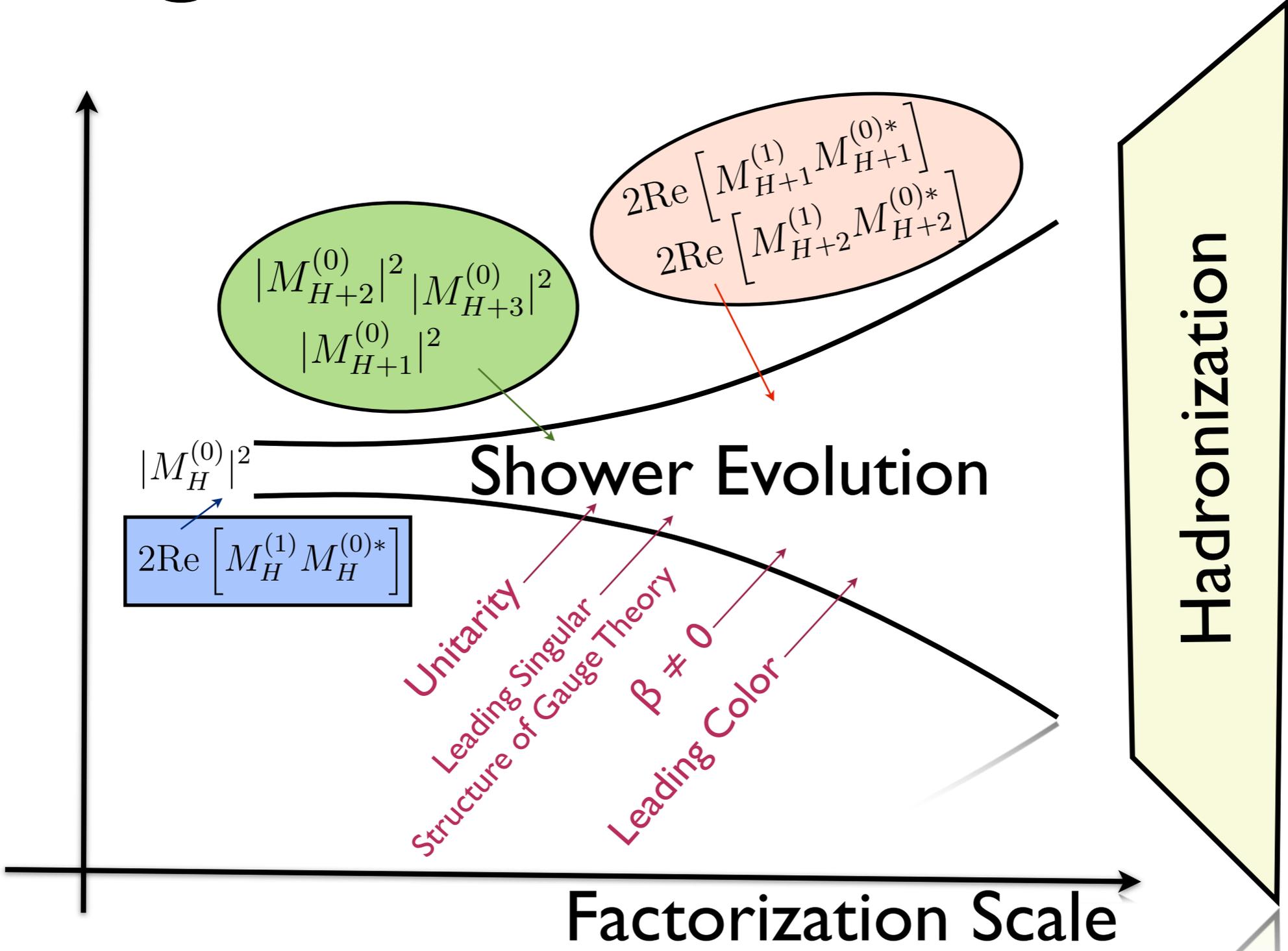
Higher-Order Corrections



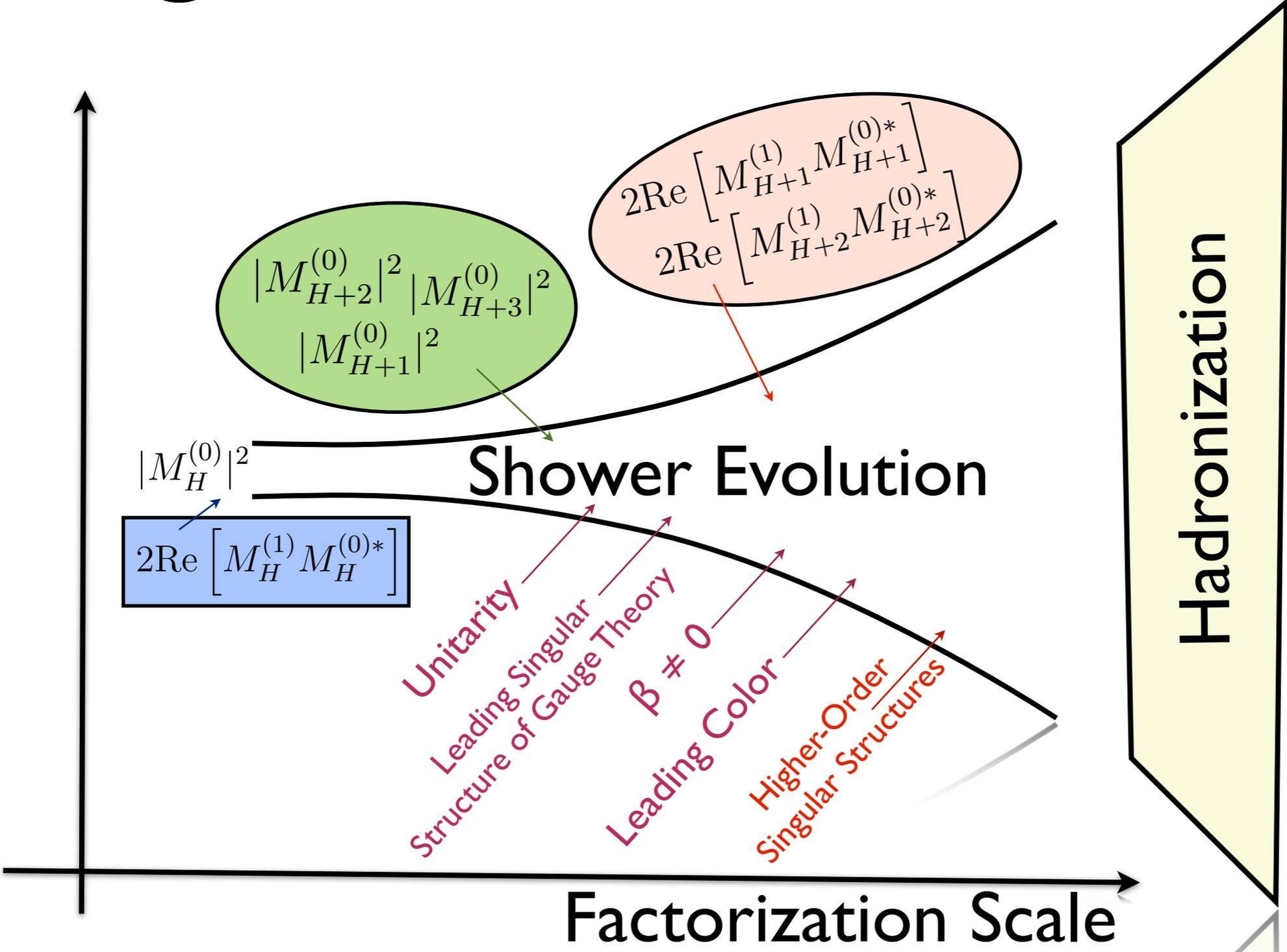
Higher-Order Corrections



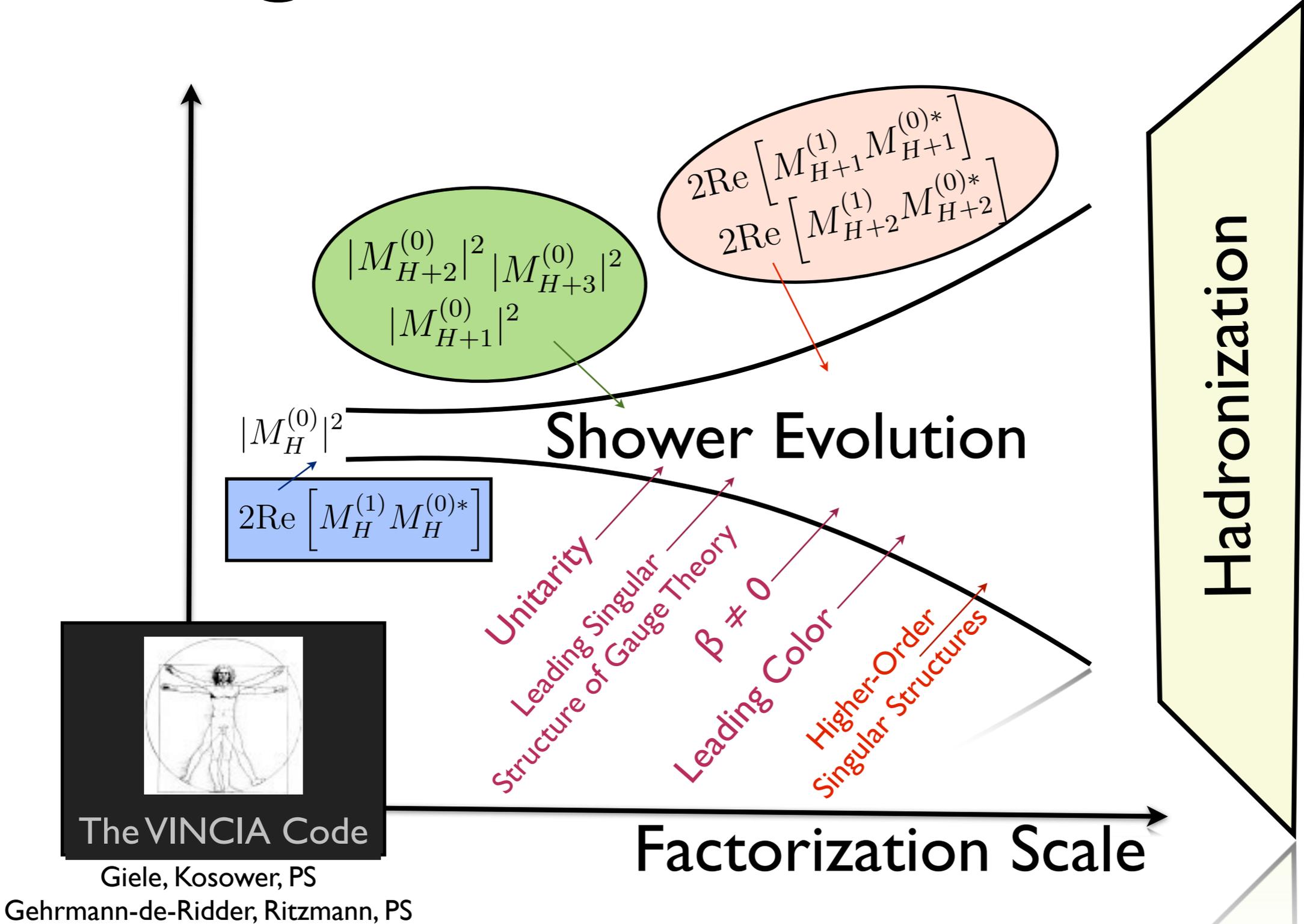
Higher-Order Corrections



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Higher-Order Corrections

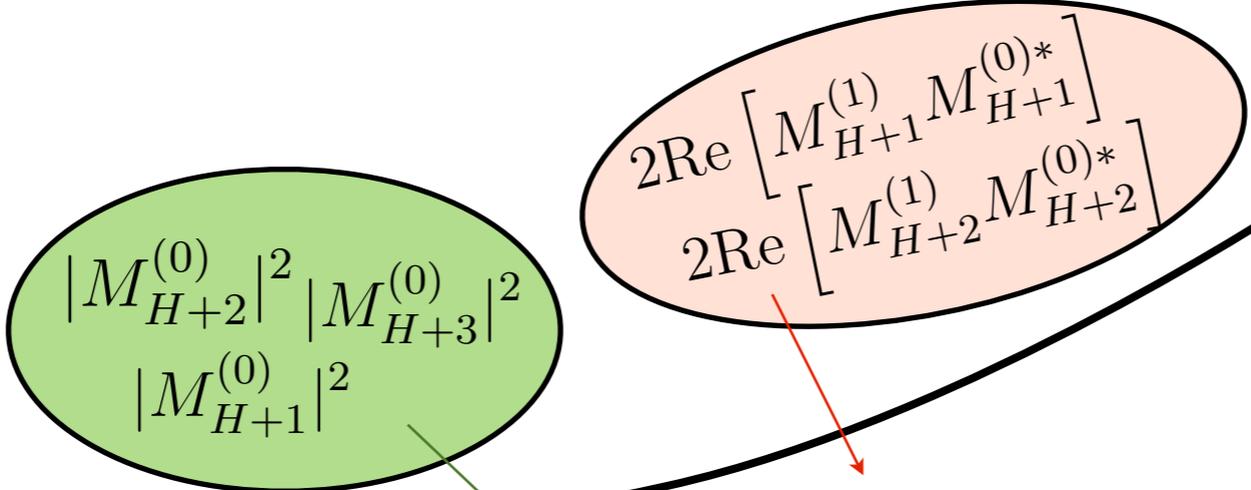


Higher-Order Corrections

Sjöstrand, Ask,
Corke, Mrenna, PS



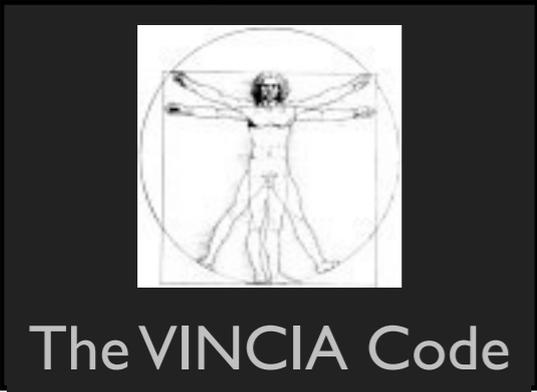
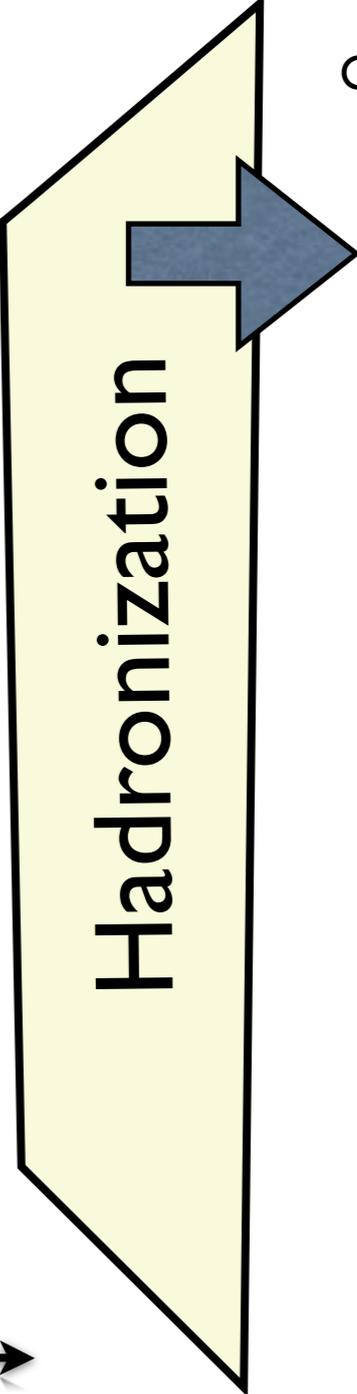
PYTHIA



$|M_H^{(0)}|^2$
 $2\text{Re} \left[M_H^{(1)} M_H^{(0)*} \right]$

Shower Evolution

- Unitarity
- Leading Singular Structure of Gauge Theory
- $\beta \neq 0$
- Leading Color
- Higher-Order Singular Structures



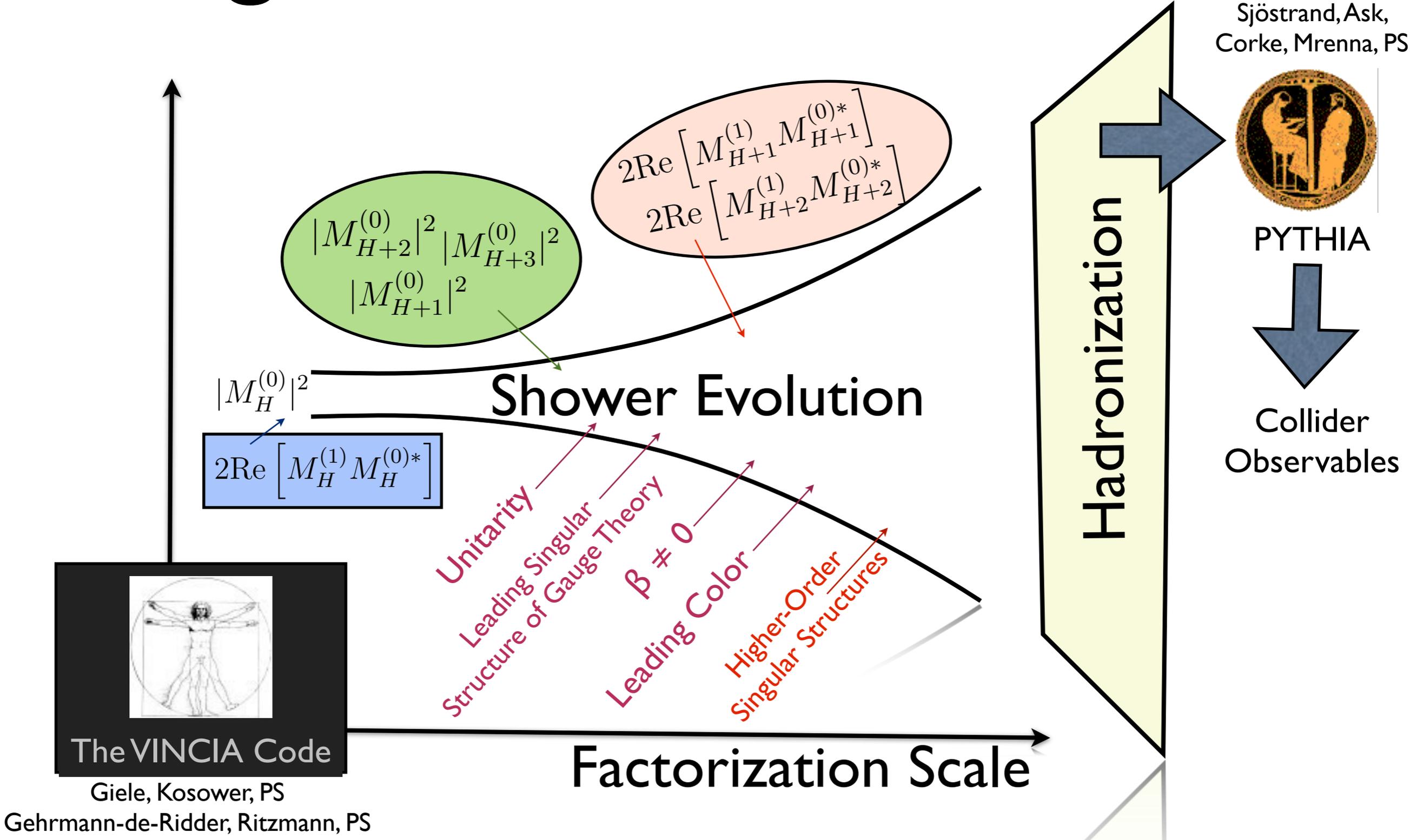
The VINCIA Code

Giele, Kosower, PS

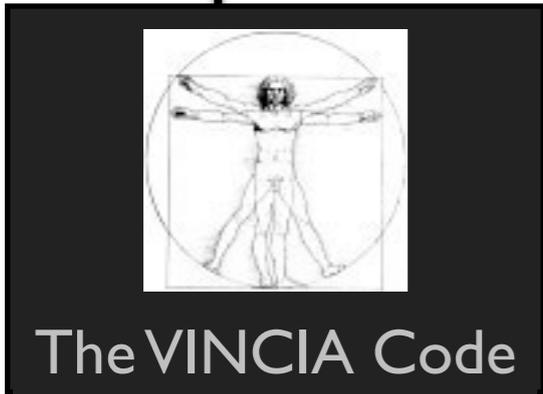
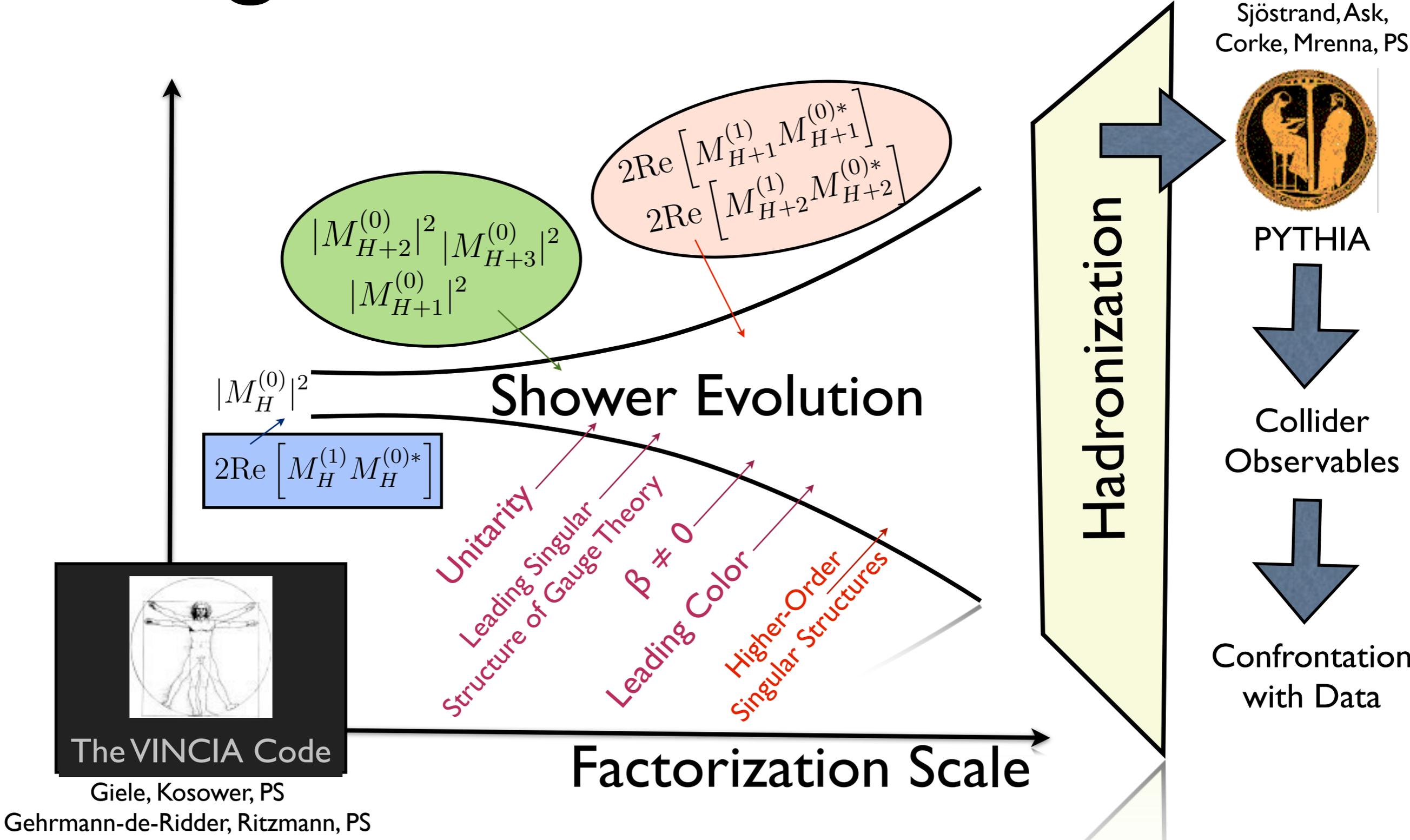
Gehrmann-de-Ridder, Ritzmann, PS

Factorization Scale

Higher-Order Corrections



Higher-Order Corrections



Giele, Kosower, PS

Gehrmann-de-Ridder, Ritzmann, PS

Sjöstrand, Ask, Corke, Mrenna, PS



PYTHIA

Collider Observables

Confrontation with Data

Peter Skands (QCD/Pheno)

Early LHC Data

CMS "Ridge"

Track multiplicities

p_T spectra

Identified Particles

Baryon Transport

Correlations

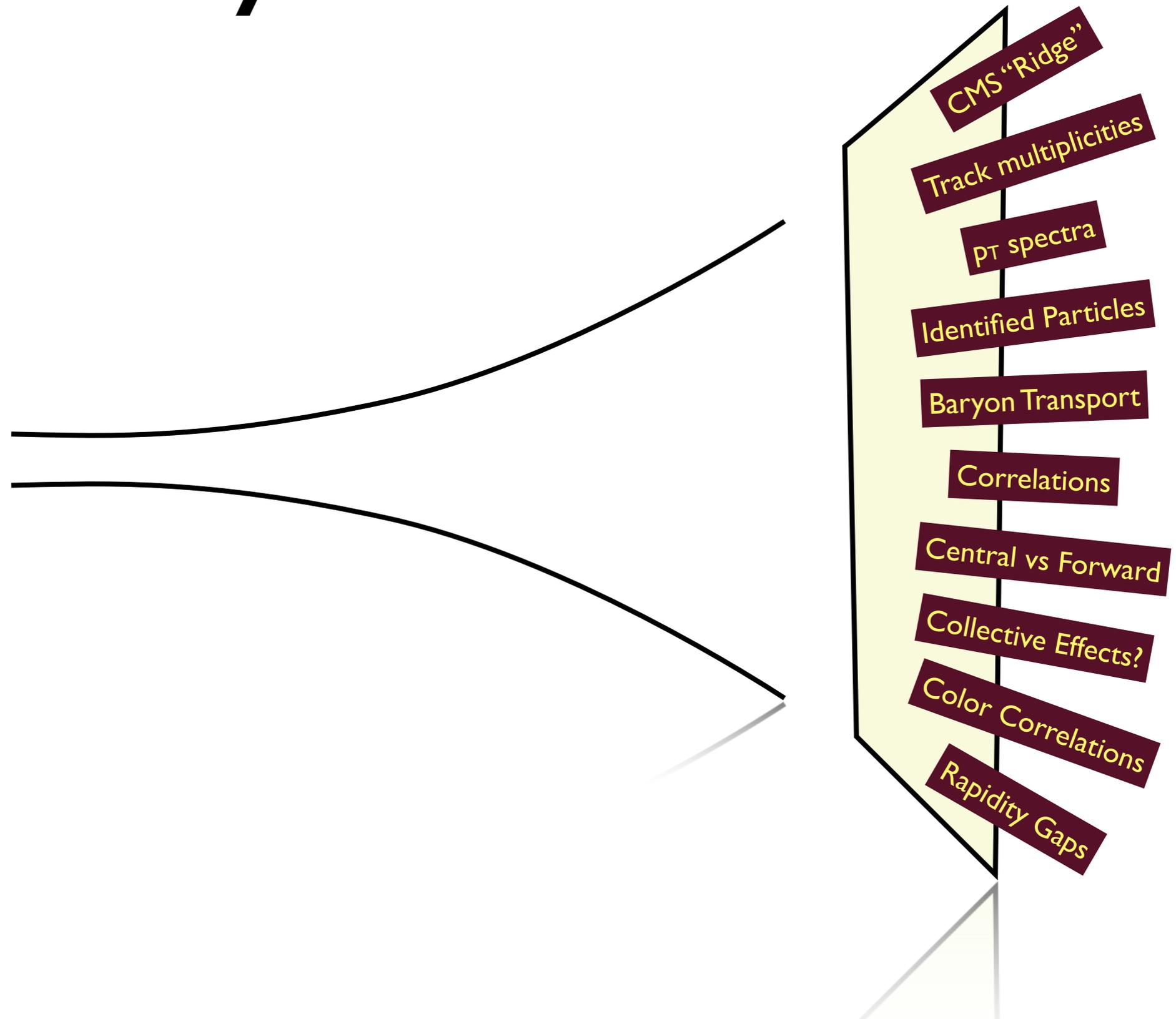
Central vs Forward

Collective Effects?

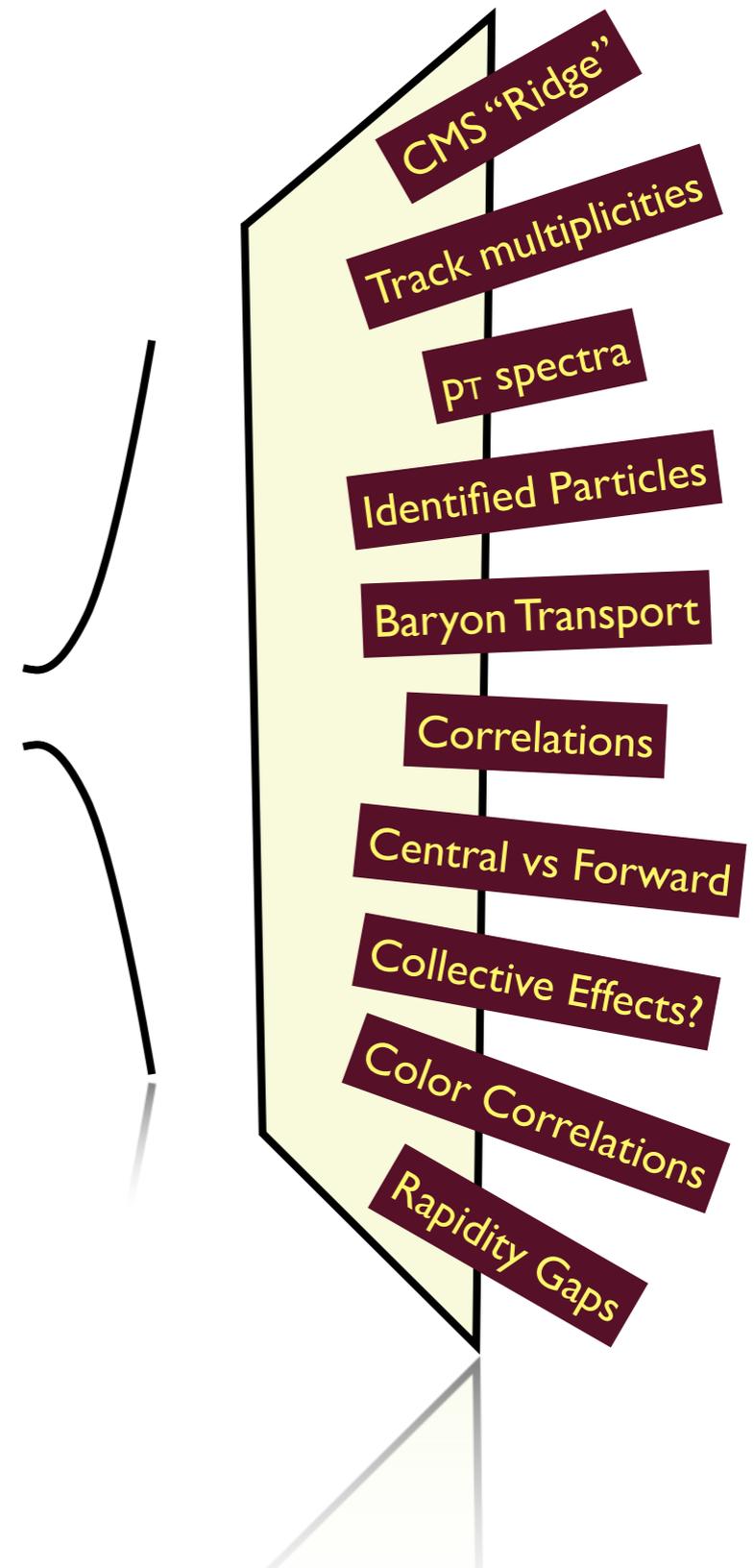
Color Correlations

Rapidity Gaps

Early LHC Data



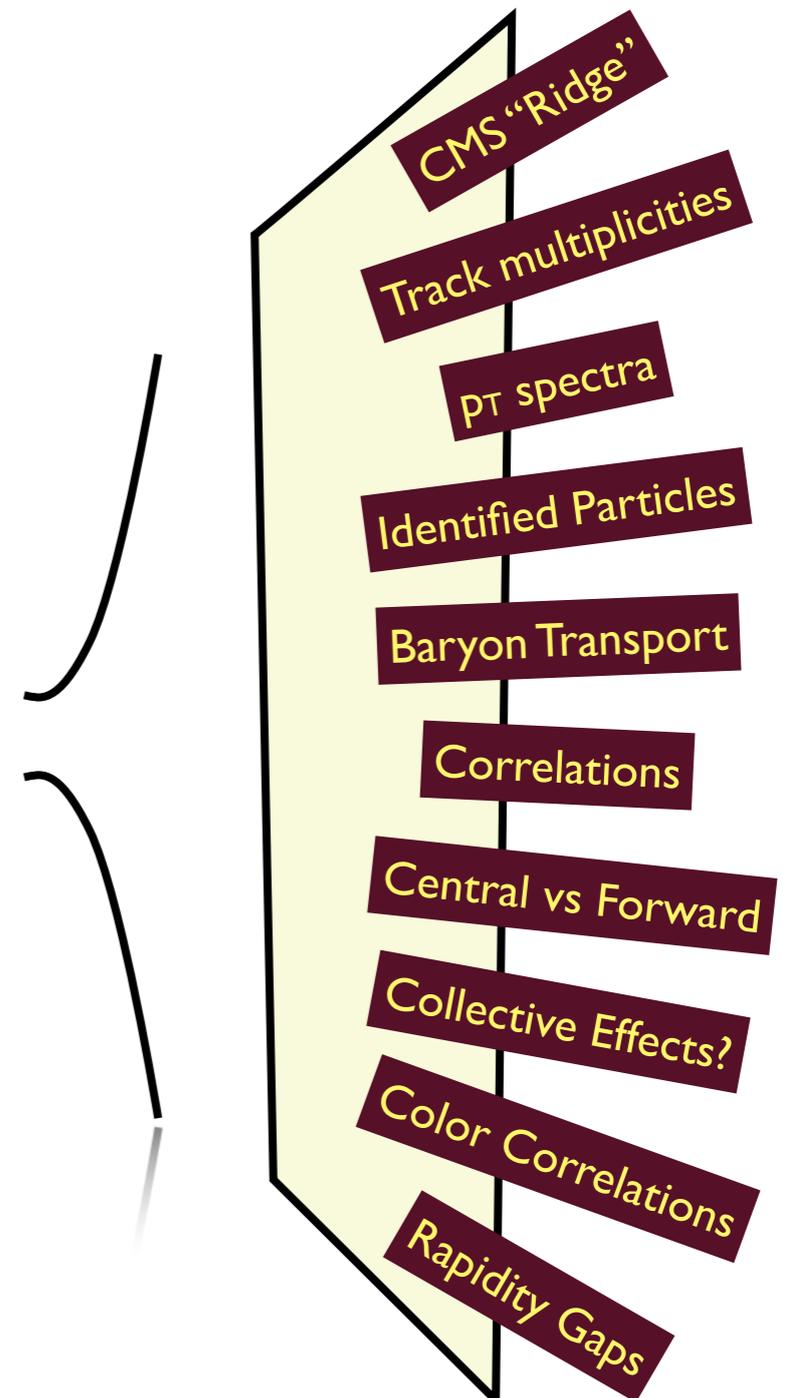
Early LHC Data



Early LHC Data

Minimum-Bias

~ All collisions with ≥ 1 track

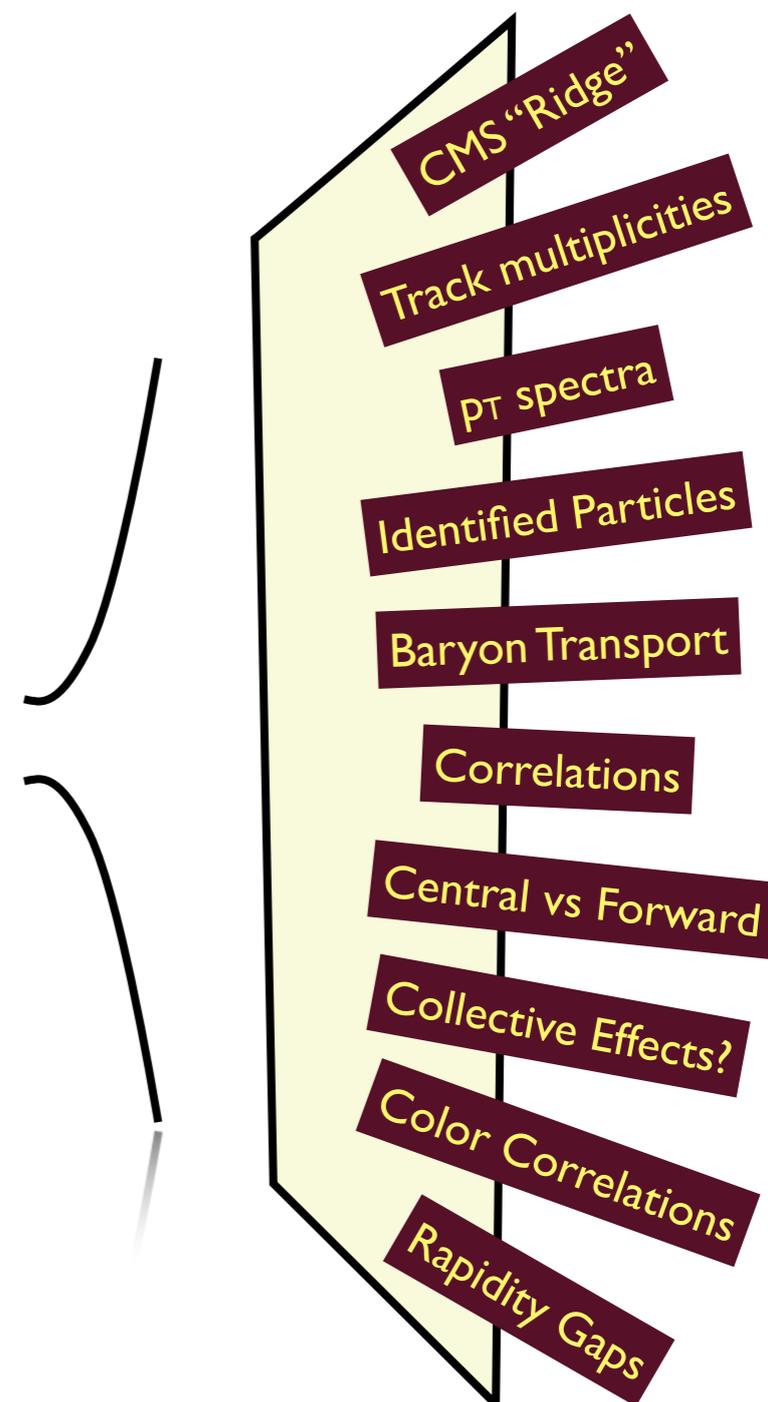


Early LHC Data

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It's a simple question:
What does the *average*
LHC collision look like?



Early LHC Data

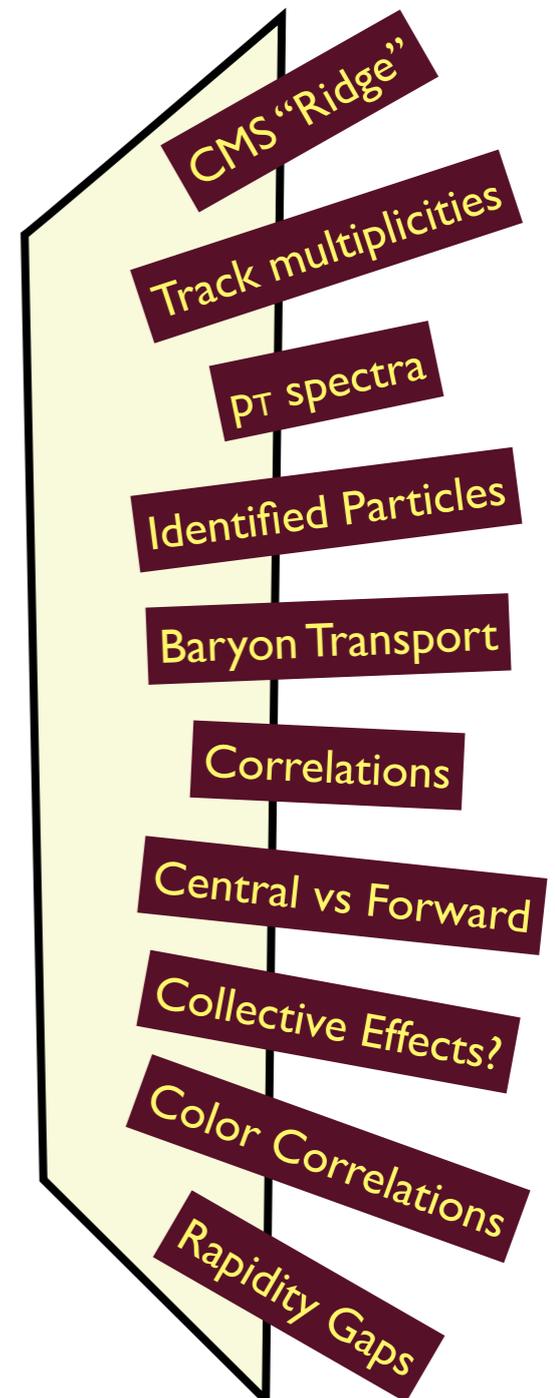
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NO HARD SCALE

Extremely sensitive to IR effects
→ Excellent LAB for studying IR effects



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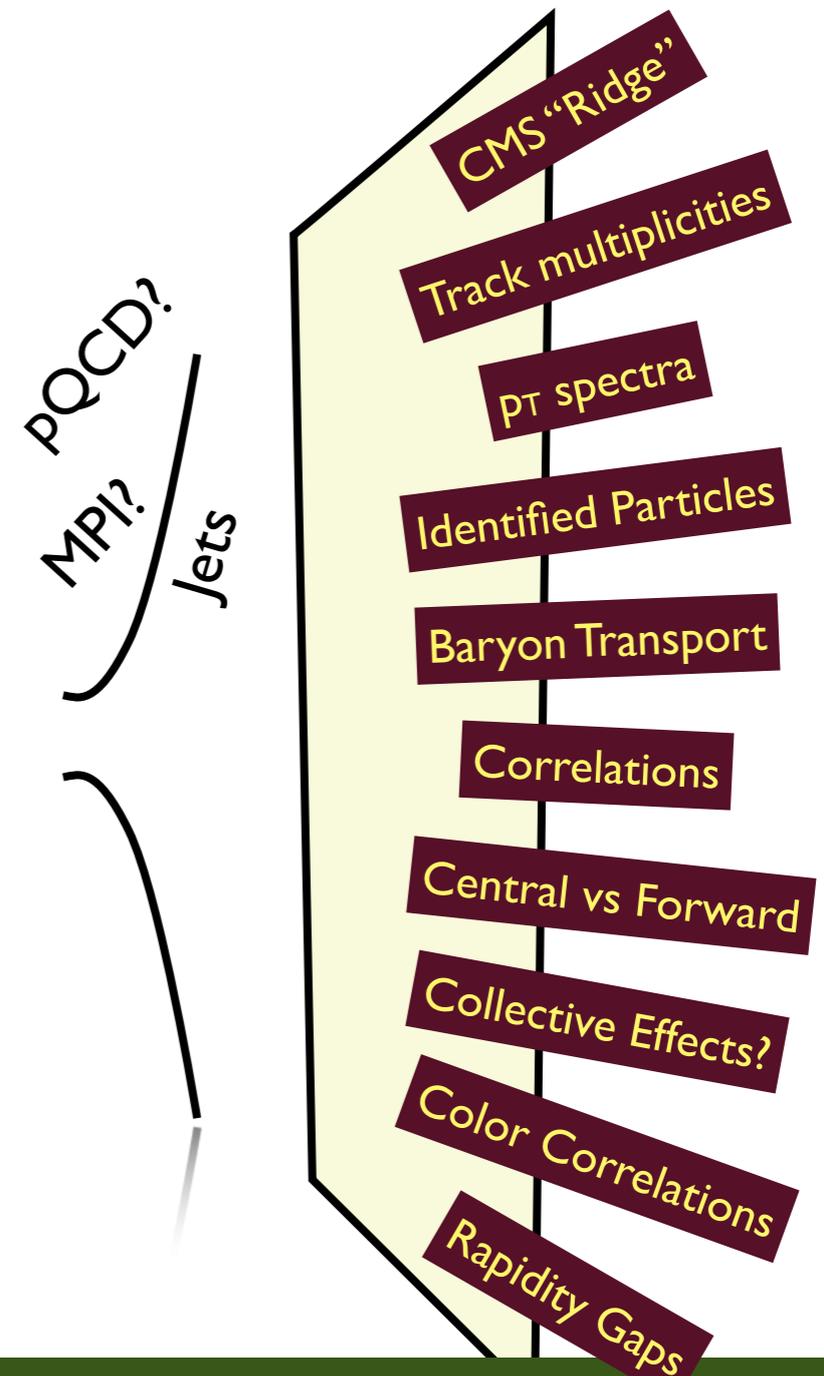
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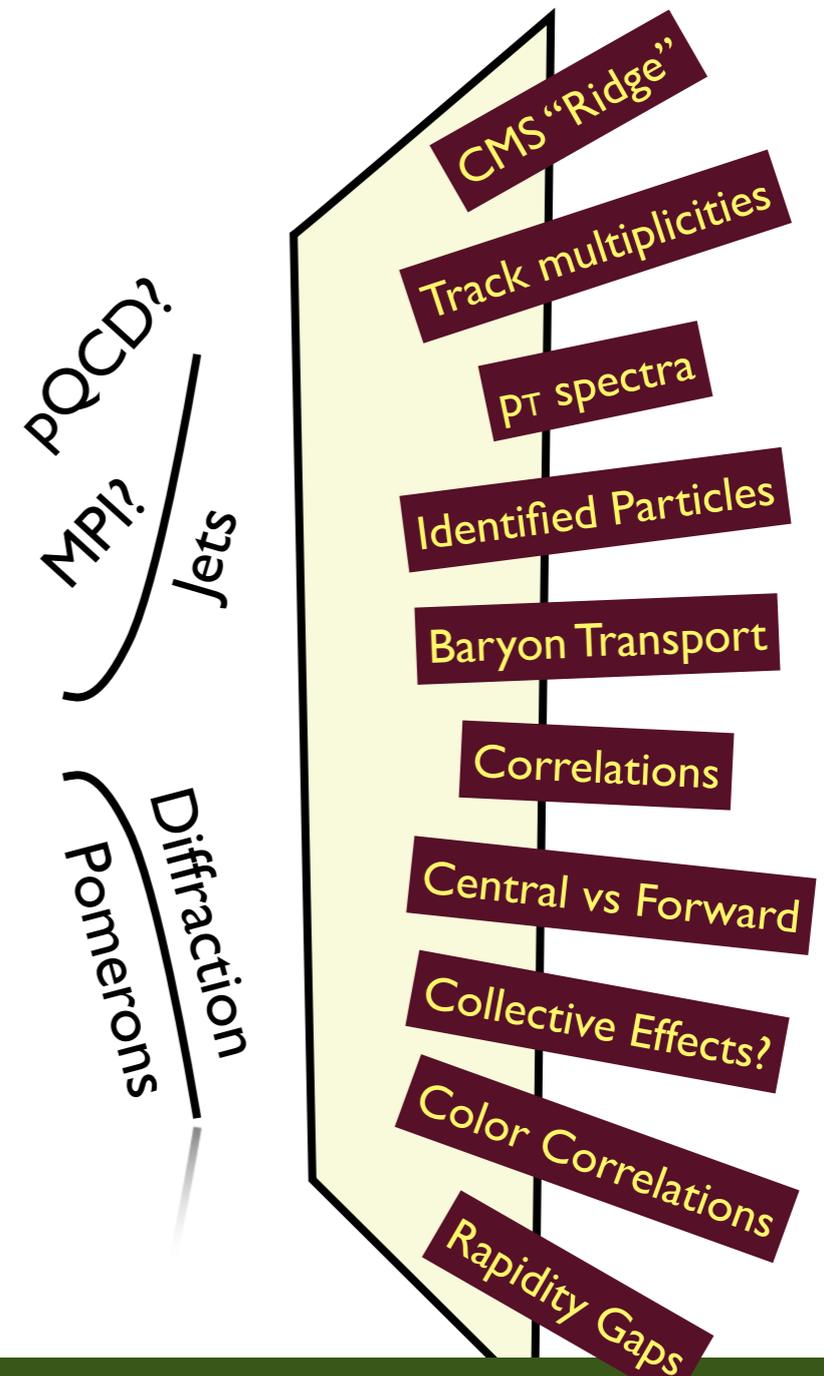
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+ universality → can constrain models and re-use for hard processes

