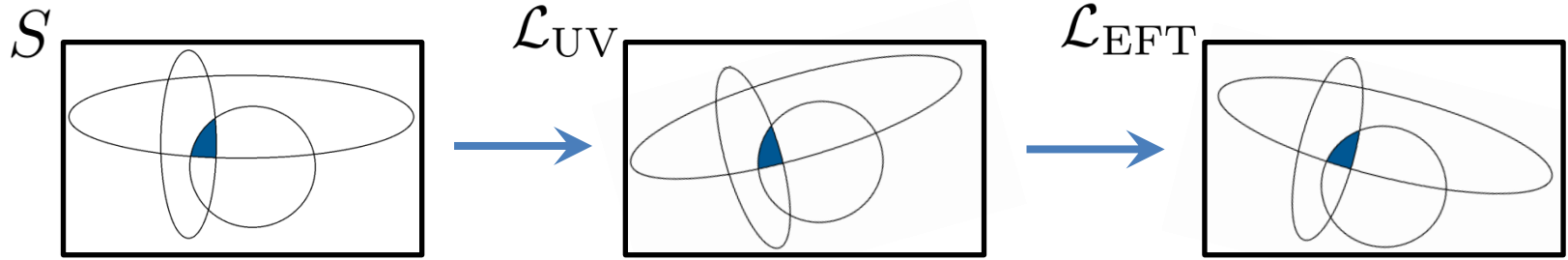


Positivity  
Bound



Unitarity

$$S^\dagger S = \mathbb{1} \quad \text{Im}A(s, 0) > 0$$

Analyticity

$$\langle f|S|i \rangle = \sum_{p,q} (\mathbb{R}\#) s^p t^q \quad \begin{cases} A(s^*, t) = A^*(s, t) \\ A(s, t) = \frac{1}{2\pi i} \oint ds' \frac{A(s', t)}{s' - s} \end{cases}$$

$$(\partial_s^2 + \text{Res}_{m^2} + \text{Res}_{3m^2}) A(s, 0) > 0$$

Massive  
Gravity

— Fierz-Pauli  $\Rightarrow$  2 Free Parameters  
— dRGT

$$\begin{aligned} \mathcal{L}_{\text{EFT}} &= \frac{\sqrt{-g}}{2} R + \frac{m^2}{2} V(g) \\ &= \frac{1}{2} h \partial \partial h + \left( \frac{\sqrt{-g}}{2} R \right)^{(3)} + \left( \frac{\sqrt{-g}}{2} R \right)^{(4)} \\ &+ \frac{m^2}{2} (\underline{b}_1 [h^2] + \underline{b}_2 [h]^2) \\ &+ m^2 (\underline{c}_1 [h^3] + \underline{c}_2 [h^2][h] + \underline{c}_3 [h]^3) \\ &+ m^2 (\underline{d}_1 [h^4] + \underline{d}_2 [h^3][h] + \underline{d}_3 [h^2]^2 + \underline{d}_4 [h^2][h]^2 + \underline{d}_5 [h]^4) \end{aligned}$$

