

# Defect RG flows in 3d Chern-Simons-matter theory

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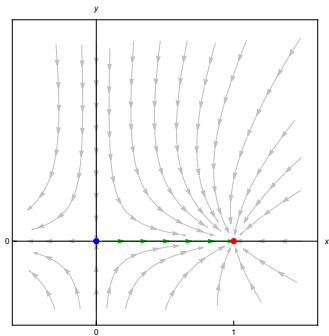
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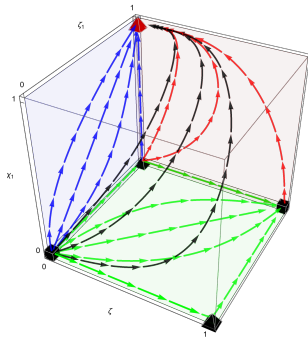
$$W = \text{Tr} \mathcal{P} \exp \left[ i \oint (A_\mu + \text{matter}) dx^\mu \right]$$

- $\langle W \rangle = f(\circ, \Delta, \dots)$  & non-trivial  $\beta$ -functions  $\Rightarrow$  flows connecting WLs
- $\circ, \Delta, \dots$  constrained or generic  $\Rightarrow$  Enriched or Defect RG flows

Enriched Flows [[2305.01647](#)]



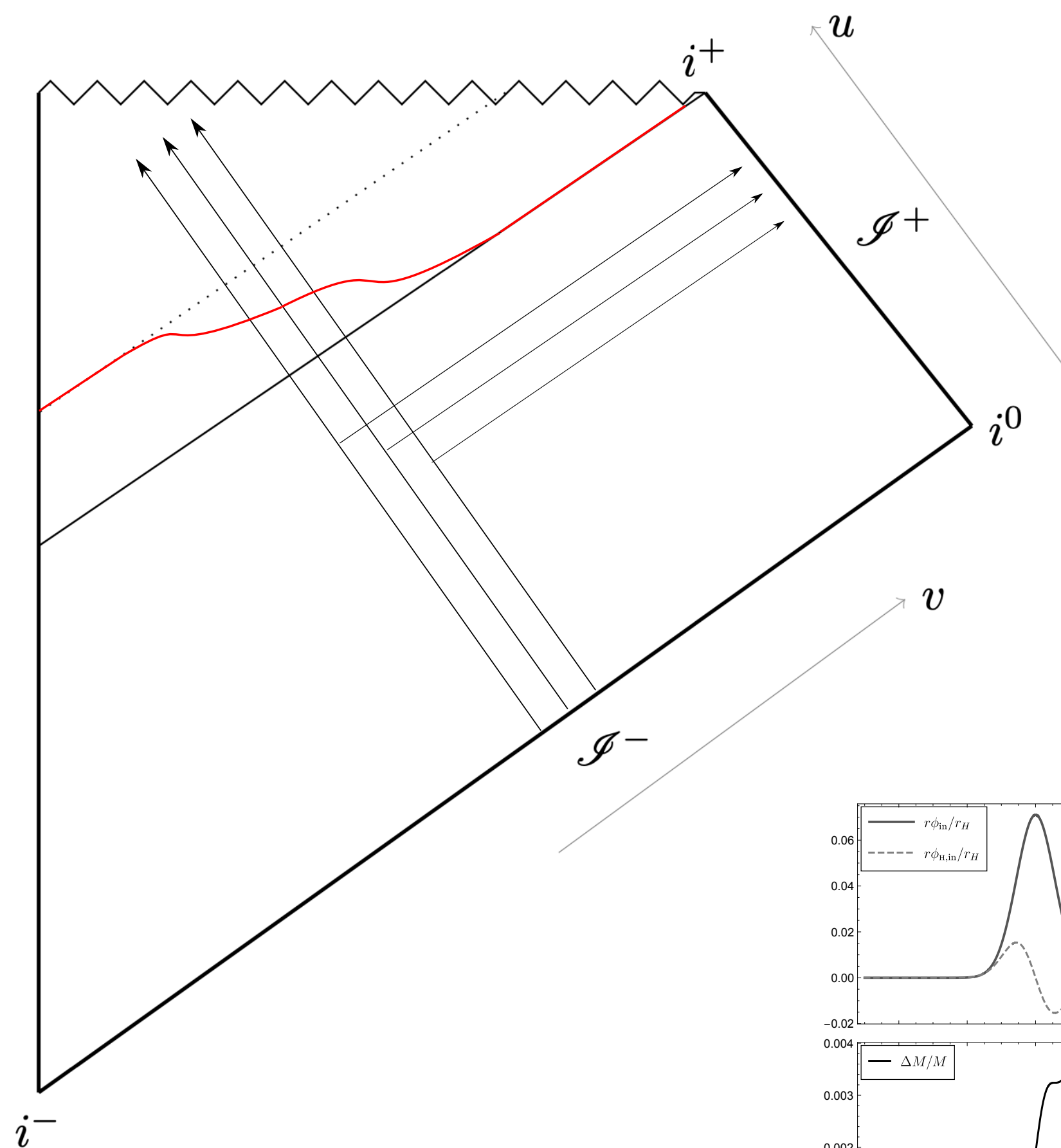
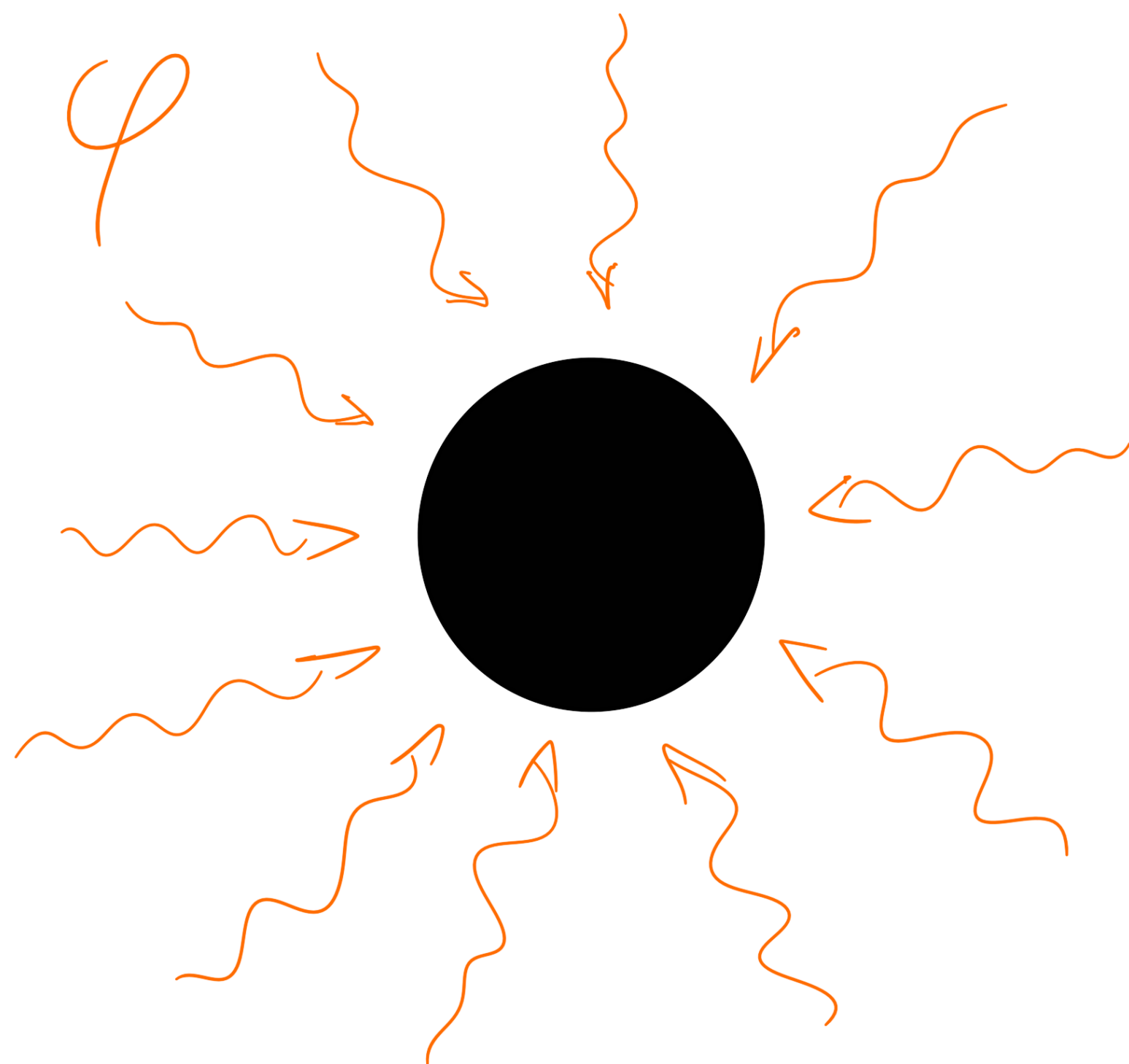
Defect flows [[2211.16501](#)]



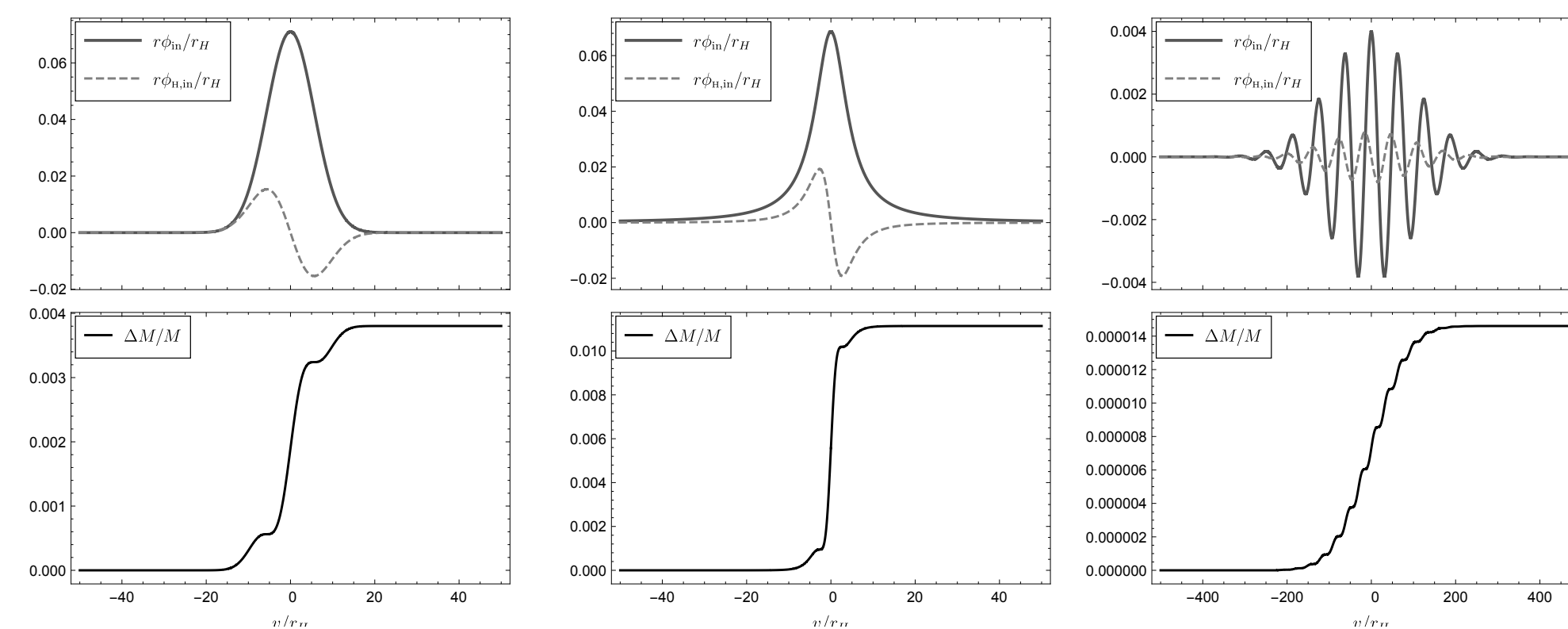
- AdS/CFT, holography and condensed matter, defect entropy

## Back-reaction of scalar waves on black holes at low frequencies

MdC, Oliveri; arXiv:2305.04970  
Phys. Rev. D 108, 044050



$$\frac{d(\Delta M)}{dv} \approx 64\pi M^2 \left( \frac{d^2 (r \varphi_{\text{in}})}{dv^2} \right)^2$$



# DOUBLE COPY PERSPECTIVE ON ASYMPTOTIC SYMMETRIES

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P. FERRERO, D. FRANCA, C. HEISSENBERG, M. ROMOLI – WORK IN PROGRESS

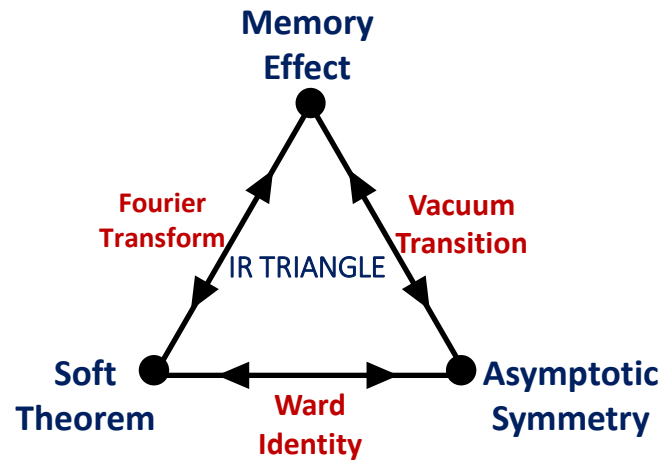
# DOUBLE COPY PERSPECTIVE ON ASYMPTOTIC SYMMETRIES

(ABELIANIZED) YANG-MILLS  
ASYMPTOTIC SYMMETRIES

DC RELATIONS

N = 0 SUPERGRAVITY MULTIPLER  
ASYMPTOTIC SYMMETRIES

## MOTIVATION



## CONVOLUTIONAL DC DICTIONARY

DC field

$$H_{\mu\nu} := A_{\mu}^a \circ \Phi_{aa'}^{-1} \circ \tilde{A}_{\nu}^{a'} \rightarrow (h_{\mu\nu}, B_{\mu\nu}, \phi)$$

DC gauge parameters

$$\alpha_{\mu} := \epsilon^a \circ \Phi_{aa'}^{-1} \circ \tilde{A}_{\mu}^{a'} \rightarrow (\xi^{\mu}, \Lambda^{\mu})$$

$$\tilde{\alpha}_{\mu} := A_{\mu}^a \circ \Phi_{aa'}^{-1} \circ \tilde{\epsilon}^{a'}$$

## ASYMPTOTIC SYMMETRIES

Expansions in Lorenz gauge

Fields  $\sum_n \frac{\varphi_n}{r^n}$

Parameters  $\sum_n \left( \frac{\epsilon_n}{r^n} + \frac{\lambda_n \log r}{r^n} \right)$

Preserve both falloffs and gauge choice

## RESULTS

MAXWELL FALLOFFS  $\longrightarrow$  GRAVITY FALLOFFS

MAXWELL  $\mathbf{O}(r^0)$  ASYMPTOTIC SYMMETRIES  $\longrightarrow$  SUPERTRANSLATIONS 2-FORM ASYMPTOTIC SYMMETRIES

( CURRENTLY DISCUSSING HOW GENERAL THIS RESULT IS )