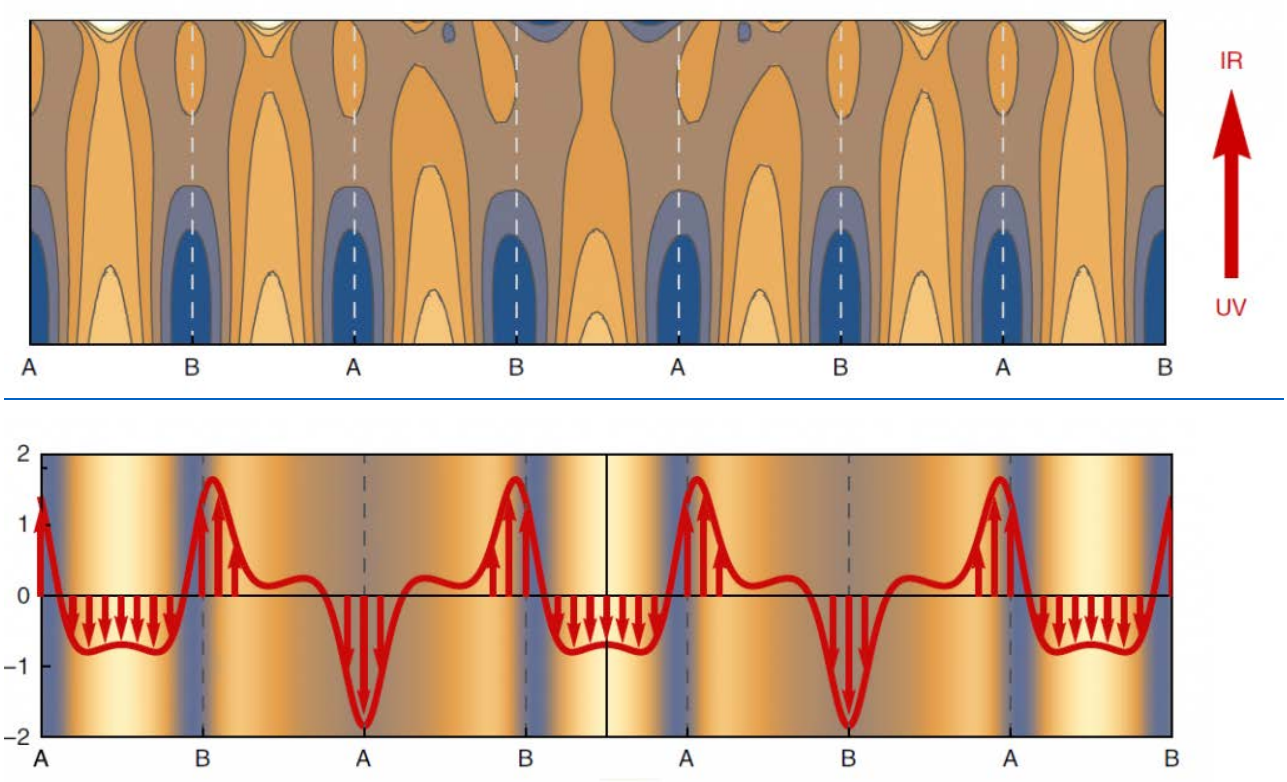
The holographic Mott-insulator: isolating the quantum critical sector.



Upon breaking translations in the space directions one looses Killing vectors with the result that one has to solve numerically a system of partial differential equations in the bulk. This is presently a technical frontier in holography. A case in point is the holographic encoding of Mott-insulators. Most generally thee can be viewed as electronic crystals which are commensurate with the background potential.

The electronic stripes as observed in some cuprates should also be viewed like this but now one is a dealing with a higher order commensuration, where the excess charge accumulates in discommensurations. We show that these actually arise naturally in holography by combining a periodic background potential and holographic crystallization. An intriguing outcome is that the “second” or “quantum critical sector” is isolated at low energy since all the momentum carrying states fall prey to the commensuration gap. We find a algebraically diverging resistivity in this regime which may explain the hitherto mysterious slow divergence of the resistivity in “spin striped” cuprates.