Initial value constraint:

Maxwell's: \( \partial_t F^{\mu\nu} = 4\pi j^\nu \rightarrow \partial_t \partial_\mu F^{\mu\nu} = 0 \)

so \( \partial_0 (D^{\mu} F^{\mu \phi}) = 0 \rightarrow D^{\mu} F^{\mu \phi} \) only has 1st derivatives on \( t \)

can only have 2nd derivatives on \( t \)

In GR: \( G_{\mu \nu} = R_{\mu \nu} - \frac{1}{2} R g_{\mu \nu} \), \( \nabla^\mu G_{\mu \nu} = 0 \) (contracted Bianchi identity)

in a world \((x^0, x^\mu)\) \( \partial_0 \) is time-like, \( \partial_0 G_{\mu \nu} \) must contain no 2nd time derivatives (to be able to cancel)

no \( G_{\mu \nu} \) contains no 2nd time derivatives.

\[ \Rightarrow G_{\mu \nu} = 8\pi GT_{\mu \nu} \]

contains no 2nd time derivatives \( \Rightarrow \) Initial value constraints eqns.