

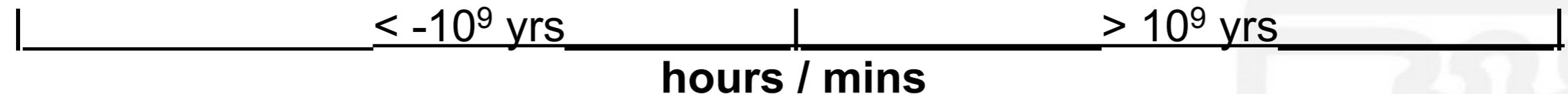
Prompt Electromagnetic Transients from Black Hole Mergers, Kelly, B.J. et al., arXiv171002132

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B B H M e r g e r s

Kelly, B.J. et al., arXiv171002132

Prompt electromagnetic transients of SMBH mergers



- Preparing for **LISA** (mergers) and pulsar timing arrays (pre-mergers)
- SBBH mergers in **canonical interstellar** environments
- **Illinois GRMHD code**
 - **Non-rotating, equal mass BBHs, uniform ρ and \mathbf{B} aligned orbital axis, moderately magnetized plasma $\mathbf{B}^2 (4\pi\rho c^2)^{-1} \sim 0.005$**
 - **Ideal** (no viscosity, no resistivity), **one fluid** ($p \sim \rho^{4/3}$, however shocks)
- **Main results:** max Poynting flux for $B_0 \sim 3.363 \cdot 10^{3-4}$ G, $\rho_0 \sim 10^{-11-13}$ g cm⁻³
 $L_{\text{Poynting-jets}} = 1.2 \cdot 10^{46} \rho_{-13} M_8^2 \text{ ergs s}^{-1}$, efficiency $L_P (\dot{M}c^2)^{-1} \sim 0.22$
Compare Alic et al., ApJ 754, 36: $L_{\text{Poynting-jets}} = 3 \cdot 10^{43} B_4^2 M_8^2 \text{ ergs s}^{-1}$

Physics Kelly et al.: included vs. neglected

