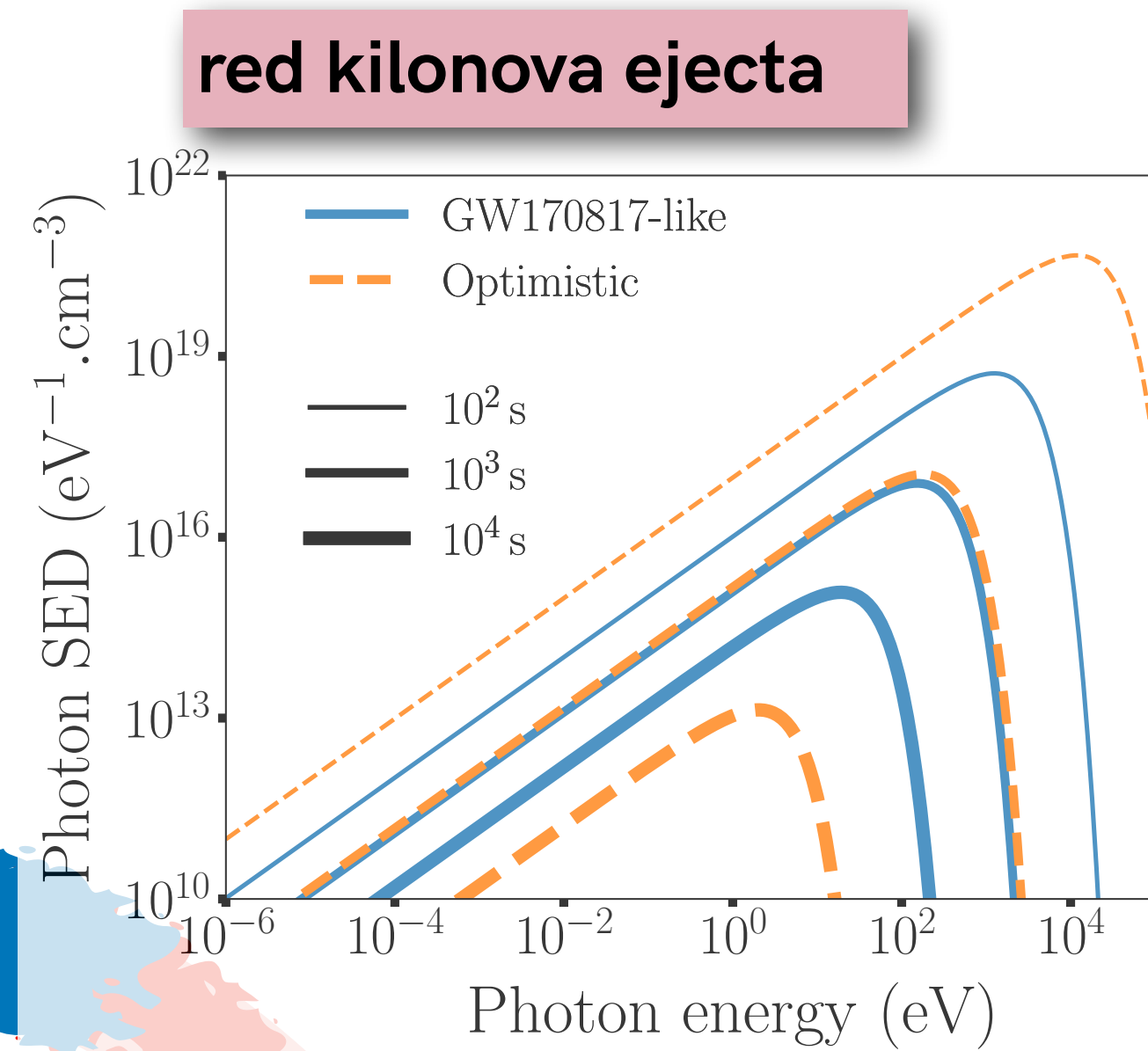
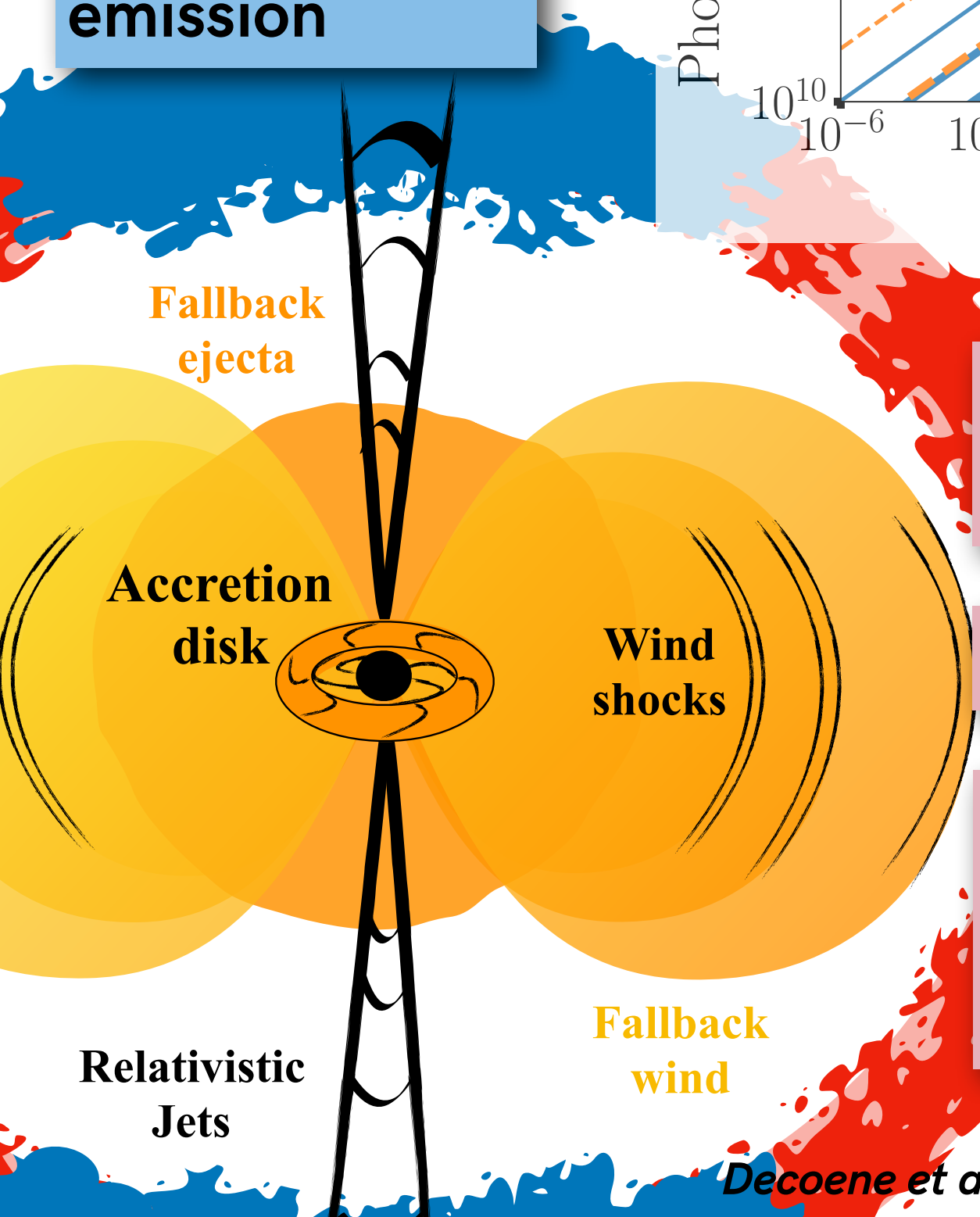


High-energy neutrinos from binary neutron-star mergers

Successful jet
Kimura et al. 2017
Biehl et al. 2018
Ahlers & Halser 2020

Choked jet
Kimura et al. 2018

Beamed emission



Thermodynamical equilibrium
Metzger et al. 2011

$$\frac{d\mathcal{E}}{dt} = -\frac{\mathcal{E}}{R} \frac{dR}{dt} - \frac{\mathcal{E}}{t_{\text{esc}}} + \dot{Q}_r + \dot{Q}_{\text{fb}}$$

energy evolution mechanical losses radiative losses

$t_{\text{esc}} \approx \left(\frac{3M\kappa}{4\pi R^2} + 1 \right) \frac{R}{c}$

Fall-back
 $\dot{Q}_{\text{fb}} = \epsilon_{\text{fb}} \dot{M}_{\text{fb}} c^2$ mass accretion rate

Nuclear reaction
 $\dot{Q}_r = M X_r \dot{e}_r(t)$

opacity (lanthanides)
lanthanides mass fraction nuclear mass energy

Barnes et al. 2016
M. R. Drout et al, 2017

Equatorial emission
Decoene, Guépin, Fang, KK, Metzger, 2020

Isotropic emission

Optimistic model:
10% of IceCube diffuse flux
Interesting for stacking and cross-correlation searches

Decoene, Guépin, Fang, Kotera & Metzger 2020

