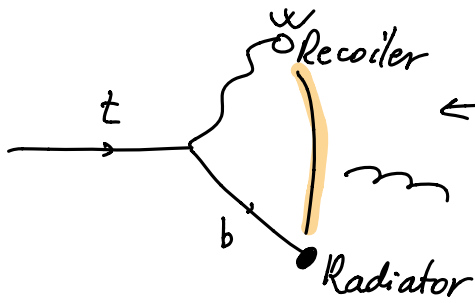


1ST EMISSION (no matter which recoil strategy)

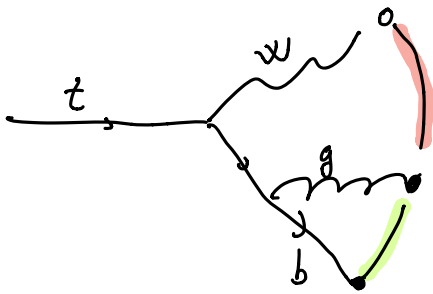


emissions can access entire phase space

(anyway taken over by POWHEG if doing matching in decays)

After 1ST Emission:

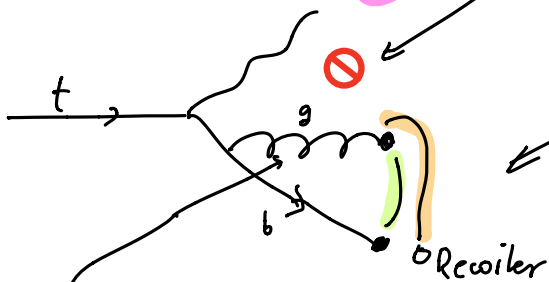
(A) Recoil To Coloured = off



← Gluon "inherits"  $W$  as recoiler. Keeps  $\sim$  full phase space.

(But  $W$  probably gets more kicks than it deserves.)

(B) Recoil To Coloured = on



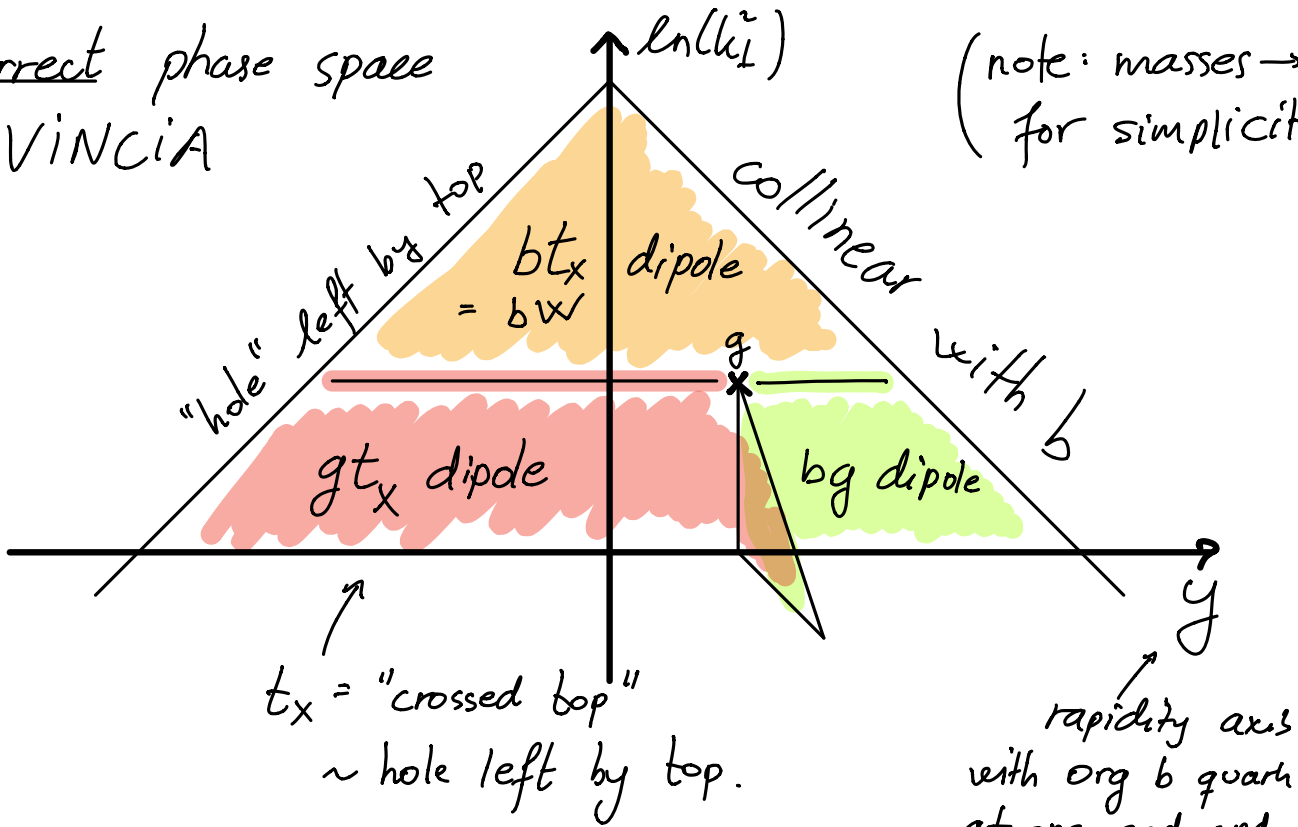
no wide-angle radiation!

Phase space "collapsed" to  $bg$  system, (which tends to be pseudo-collinear!)

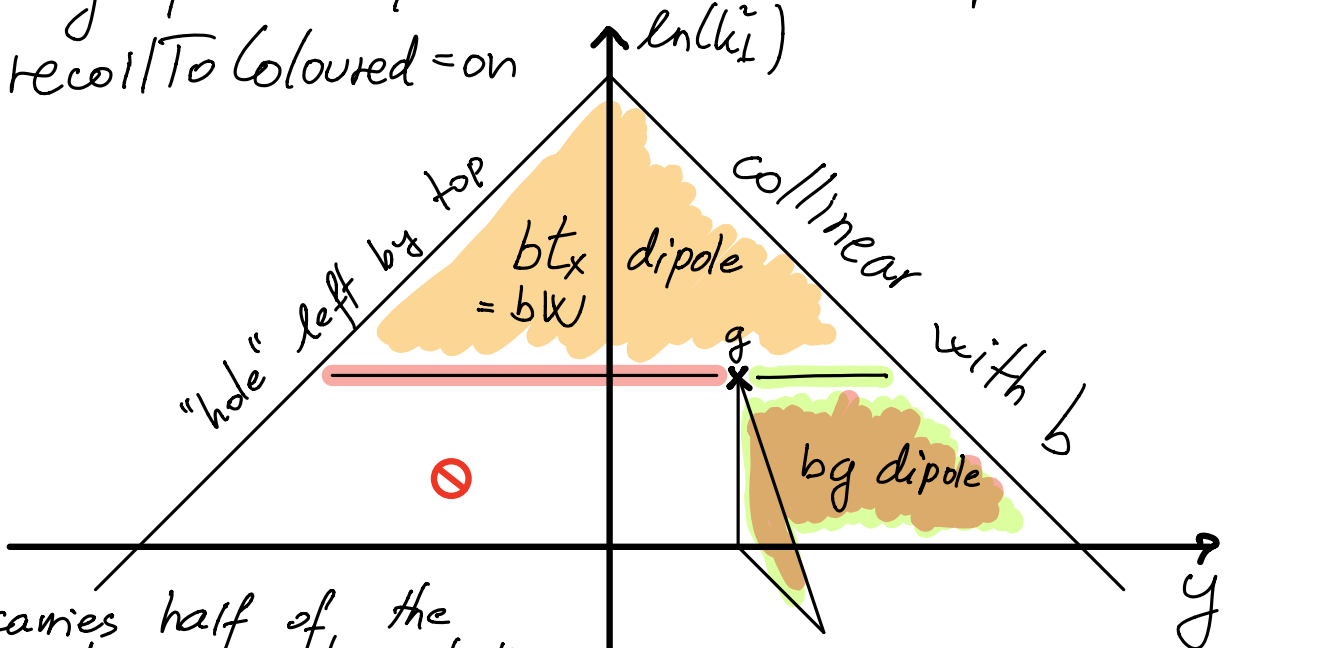
enhancement for-collinear  $g$   $\Rightarrow$  small phase space.

I think this produces an incorrect resummation of the radiation off the gluon. Using the Lund plane ( $\ln k_{\perp}$  vs rapidity) to illustrate:

Correct phase space  
 ~ VINCIA (note: masses  $\rightarrow 0$  for simplicity)



Wrong phase space  
 ~ recoil to coloured = on



W carries half of the original momentum, but is prevented from being used to define size of phase space.