

Initialize:  $q^a = q^{\min} = -b, q^b = q^{\max} = b, p^a = p^b = p,$   
 $j = Nl, I(p) = 0, \Pi^a = (Nl), \Pi^b = (Nl)$

Trace back  $(q_j^a, p_j^a)$  and  $(q_j^b, p_j^b)$  and find the lines  $k$  and  $l$   
from which they are emitted.  $\Pi^a = (k, \Pi^a), \Pi^b = (l, \Pi^b)$

Are they emitted from the same line ( $k = l$ )?

Yes

No

Are they emitted from  
the source ( $k = 1$ )?

No

Yes

Is  $j = Nl$ ?

Yes

No

$I(p) = I(p)$

$j = k$

$I(p) = I(p) + |q^a(\Pi^a, p) - q^b(\Pi^a, p)|$

Apply bisection to  $(q^a, p)$   
and  $(q^b, p)$

Find  $(q^c, p)$  and  $(q^d, p)$   
where  $|q^c - q^d| < \text{toll}$   
and  $\Pi^c = \Pi^a$

$(q^b, p) = (q^c, p)$

$(q^a, p) = (q^d, p)$