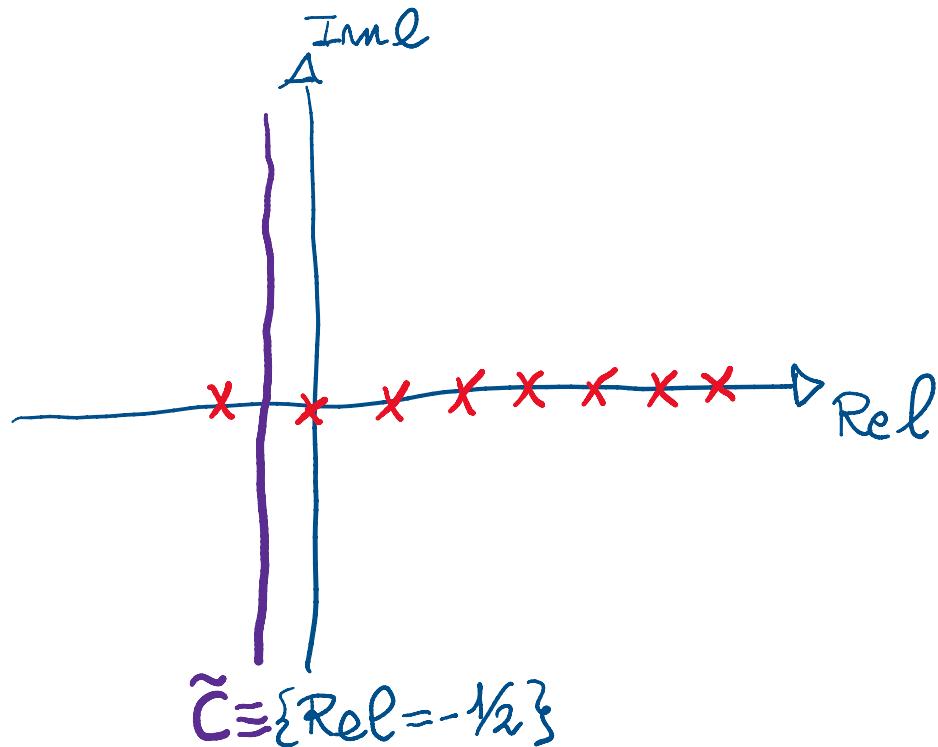


# Comparing B.I. without and with Monopoles

## Standard case

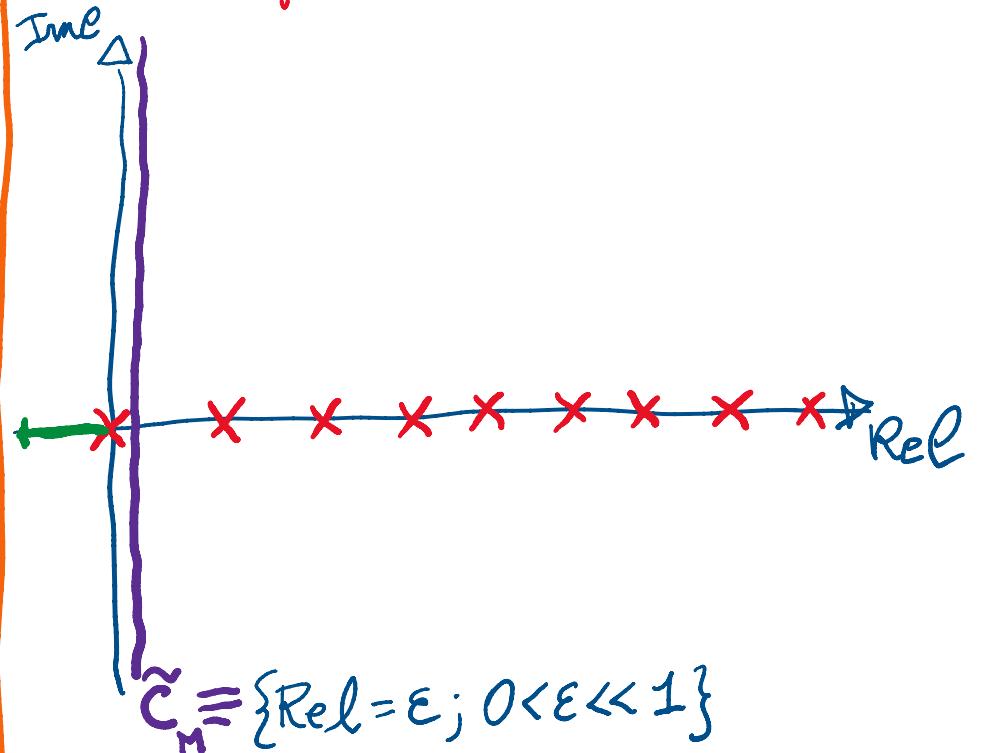
Contour for B.I.



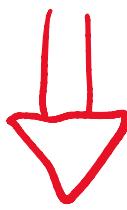
||

## Regge theory with defect

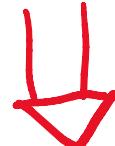
Contour for the B.I. with defect



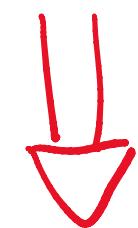
||

  
In the usual case within the  
B.I. we have

$$\text{B.I.} \sim \int_{-\infty}^{+\infty} dy P_{iy-\frac{1}{2}}(-x) \{ \text{Regular factors} \}$$

  
Since the label of the  
Legendre polynomial has  
negative real part the  
B.I. is suppressed  
with respect to Regge poles

  
the monopole introduces a  
cut which prevents one  
from pushing  $\tilde{\zeta}_M$  further to  
the left

  
the B.I. reads

$$\text{B.I.} \sim \int_{-\infty}^{+\infty} dy P_{iy+\epsilon}^{(1,0)}(-x) \{ \text{Regular factors} \}$$

  
Since the label of the Jacobi  
polynomial has non-negative  
real part, the B.I. is not

In real part, the B.I. is not anymore negligible with respect to Regge poles

Consequently, when defects are present, the scattering amplitude should not be described using the dominant Regge pole only as the B.I. is not negligible.

**Dangerous region:** this is especially true for small  $\kappa$  (since for large values of  $\kappa$  and for raising trajectories the Regge poles will dominate)

In QFT-terms we would say:

$$A_{\text{out}} \sim s^{\alpha(t)}$$

when  $t$  is large enough (so that

$A_{\text{Defect}} \sim s^{\alpha}$

When  $t$  is large  $\dots$

the rising of the trajectory is important) the usual Regge-pole picture works. When  $t$  is small the B.I. cannot be neglected

$$\lim_{t \rightarrow 0} A_{\text{Defect}}(s, t) \neq \text{R.P.}$$