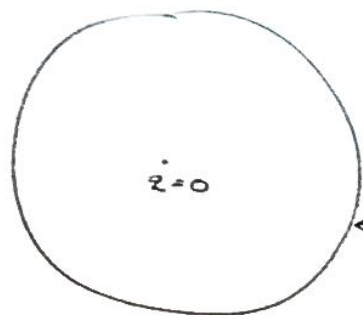


PAULOS, PENEDONES, TOLEDO, VARREES (ALSO LUCIA CORDOVA)



$$f(z) \sim \frac{g^2}{z}$$

$$\max g = ?$$

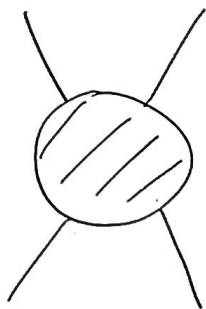
$$A: \quad g^{\max} = 1 \\ f^{\text{opt}} = 1/z$$

$$\sim \partial R, \quad |f(z)| \leq 1$$

$$h(z) \equiv f(z) / (1/z)$$

$$- |h(z)| \leq 1 \quad \text{in } R$$

$$h(0) \equiv g^2 \leq 1$$

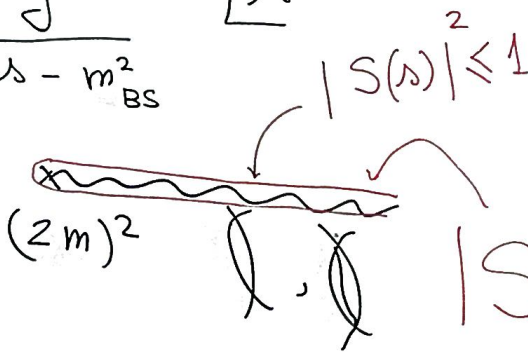
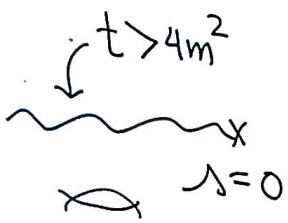


$$s = E_{CM}^2$$

$$t = \frac{-\cos\theta - 1}{2} (E_{CM}^2 - 4m^2) = 4m^2 - s$$

$$u = \frac{+\cos\theta - 1}{2} (E_{CM}^2 - 4m^2) = \underbrace{\hspace{10em}}_{2D}$$

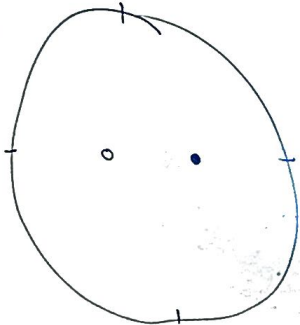
$$\frac{g^2}{s - m_{BS}^2} \quad \angle s$$



$$S(s) = S(4m^2 - s)$$

$$|S_{2 \rightarrow 2}|^2 + \sum_{\text{other}} |S_{2 \rightarrow X}|^2 = 1$$

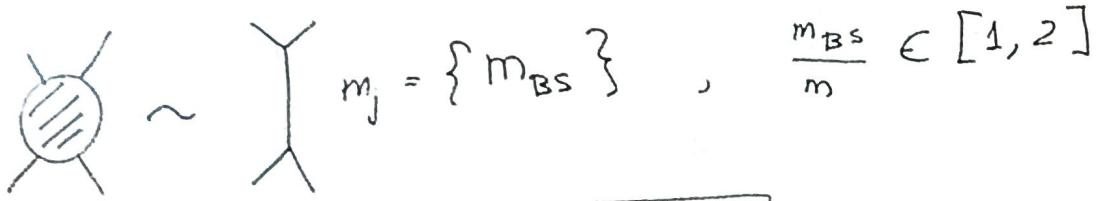
$$X + \frac{1}{X} = \frac{4m^2}{s - 2m^2}$$



$$h(x) \equiv S(x) / \left. \frac{1 - x^2 x_*^2}{x^2 - x_*^2} \right\} S_{opt}$$

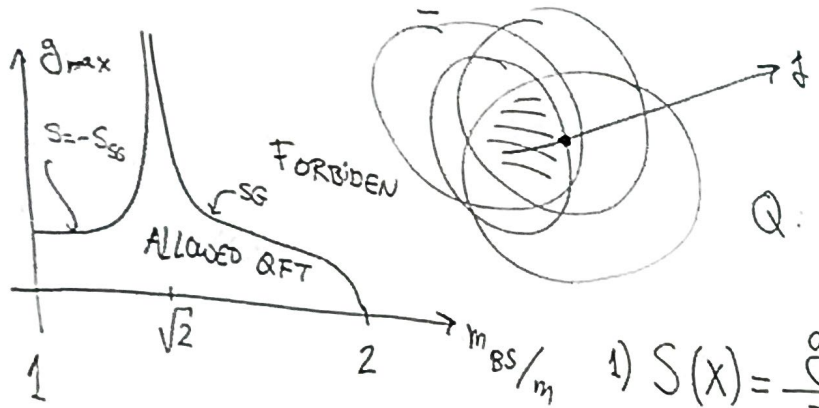
$$\Rightarrow |h(x_*)| \leq 1 \Rightarrow g_{max}$$

v/ PAULOS, PENEDONES, TOLEDO, VARREES (ALSO LUCIA CORDOVA)



$$S = \frac{\sqrt{\Lambda(\Lambda-4)} + \sqrt{m_{BS}^2(m_{BS}^2-4)}}{\sinh\theta + i \sin\lambda} = \frac{\sinh\theta + i \sin\lambda}{\sinh\theta - i \sin\lambda}$$

$\swarrow m_{BS}$



$$\Lambda = 4m^2 \cosh^2 \frac{\theta}{2}$$

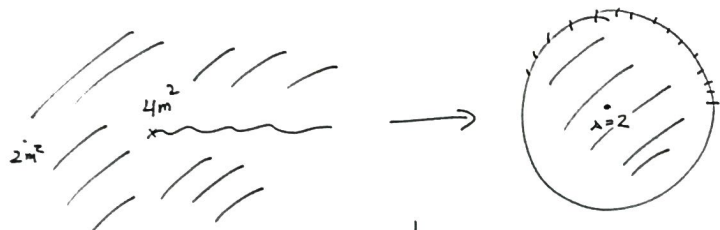
Q:  $\{ m_{BS}^{(1)}, \dots, m_{BS}^{(N)} \}$  ,  $g_{max}^{(1)}$

1)  $S(x) = \frac{g^2}{x^2 - x^{2*}} + \sum C_n x^n$

2)  $|S(e^{i n / N^*})|^2 \leq 1$  ,  $n=1 \dots N$

3) FindMax  $[g, t]$ ,  $ig, n$

w/ PAULOS, PENEDONES, TOLEDO, VARREES (ALSO LUCIA CORDOVA)



$$S(\lambda) = S(\lambda, t) \Big|_{t+\lambda=4m^2}$$

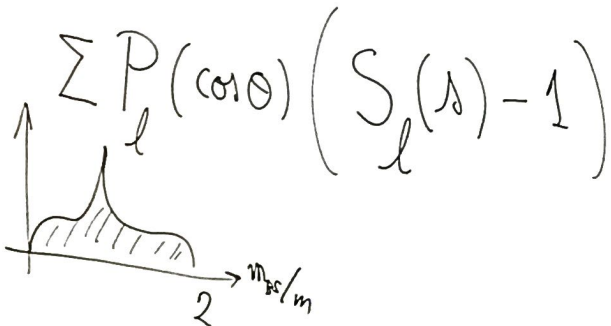
$$\text{where } S(\lambda, t) = \text{poles} + \sum_{\text{Sym}} C_{nm} \rho(s)^n \rho(t)^m$$

$\uparrow$   
 $S(\rho(s), \rho(t)) \Big|_{\text{Pol}(\rho)=0}$

$$\rho(\lambda) = \frac{\sqrt{\lambda-4} - \sqrt{2-4}}{\sqrt{\lambda-4} + \sqrt{2-4}}$$

$$T(\lambda, t) = T(\lambda, t, u) \Big|_{t+\lambda+u=4m^2}$$

$$= \text{poles} + \sum_{\text{Sym}} C_{nmk} \rho(s)^n \rho(t)^m \rho(u)^k$$



$$|S_l(s) = \int d\theta (\dots) T|^2 \leq 1, \lambda > 4m^2$$

$l = 0, \dots, L_{\text{max}}$

$\lambda_1, \lambda_2, \dots, \lambda_N$