Disclaimer

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In the following, we want to confirm some of the calculations from <1210. 6793 7 (the forelater et al.), in particular 29.04.2021 regarding the disperson relations therein.

We start will Eq. (5), which can be derived by transforming into the CMS (See Mathematica),

 $q = \begin{pmatrix} E_q \\ q \end{pmatrix}, \quad p_i = \begin{pmatrix} E_{p_i} \\ -\overline{q} \end{pmatrix}, \quad p_z = \begin{pmatrix} E_{p_2} \\ \overline{p} \end{pmatrix}, \quad B = \begin{pmatrix} E_{p_2} \\ -\overline{p} \end{pmatrix},$

 $E_q = \frac{S - H \kappa^2}{2457}$, $E_{p_1} = \frac{S + M \kappa^2}{2457}$, $|q| = \frac{S - M \kappa^2}{2457}$,

 $E_{p_2} = \frac{G'}{2} = E_{p_2}, |\vec{p}| = \frac{G'}{2} S_{\vec{k}}(S), O_{\vec{k}}(S) = \sqrt{1 - \frac{1+M_n^2}{3}},$

where we define $(=q)\cdot \vec{p} = |\vec{q}|\cdot |\vec{p}| \cos\theta$, i.e. θ_{ii} is the Scattering angle between \vec{p} and (=q). Then $(s = (q+p_i)^2 = (p_i+p_i)^2$ $t = (p_1 - p_2)^2 = (p_0 - q)^2$ $U = (p_1 - p_0)^2 = (p_2 - q)^2$ $t = \frac{3h^2 - s}{z} + \frac{s - h^2}{z} + \frac{1}{z} + \frac{1}{z}$ $\mathcal{U} = \frac{3M^2 - s}{2} = \frac{s - M^2}{2} = \frac{1}{2} \frac{3M^2 - s}{2} = \frac{1}$

Due to isogni symmetry, the salar huchier F(s,t,u) of

M(s,t,u) = i Europ Et pipz po F(stra) (8(g) = T(p) - T(p) T(p))

is fully symmetric in its arguments. Hence, the partial-wave decomposition reads z=coso

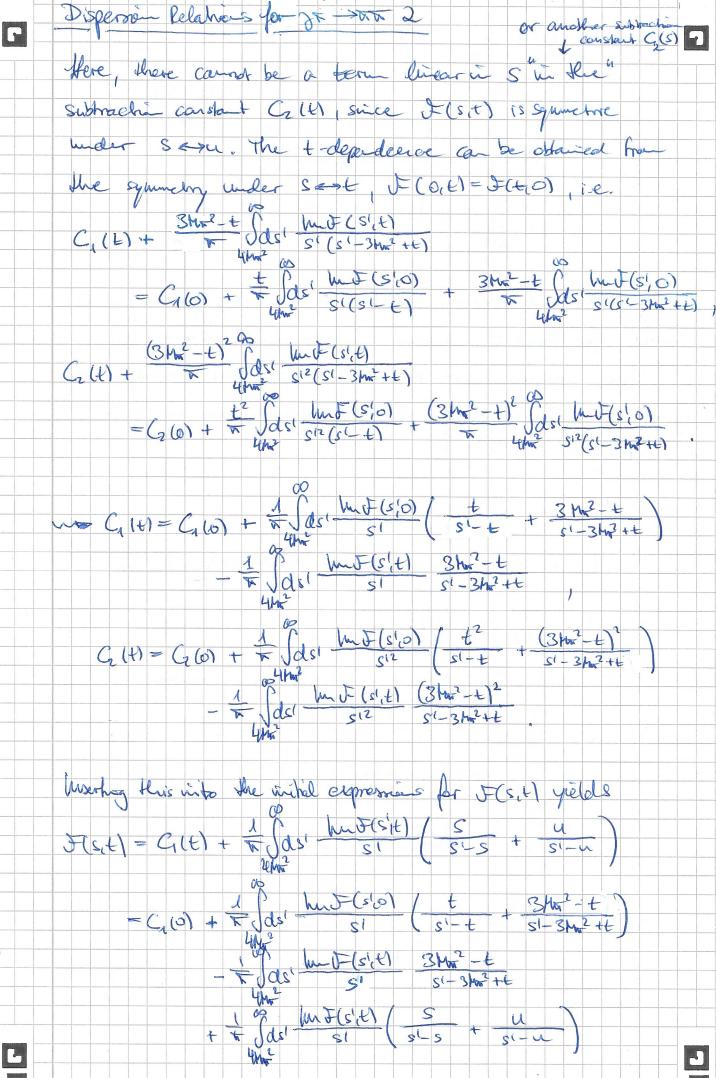
JECS, ten) = E fecs) re(2),

 $G_{3} \cdot G_{T} = G_{m} \cdot G_{m} \cdot G_{m} = -1 \mod \mathbb{I}_{3} = 0 \mod \mathbb{I}_{miniel} = 1$

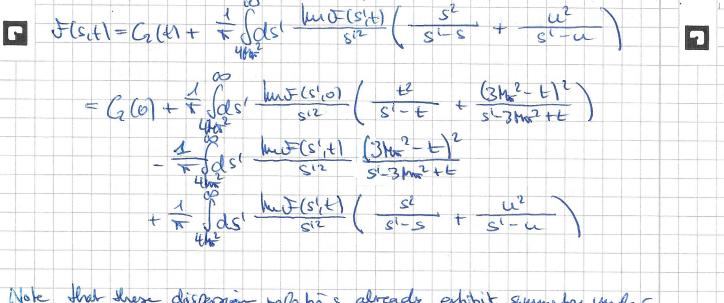
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$$f_{1}(s) = \frac{1}{2} \int dz (1-z^{2}) f(s,t,w).$$
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will the ascace of industric contributions, its imaginary pet meds
huff(c) = $\sigma_{s}^{s} (t^{*}_{1}(s))^{s}_{1} f(s) O(s - 4his),$
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the other notes and us save for concertors a peak base.
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other dust the university related implies hereads for the other
(and is persente the particle as while $O(s)$.
Note that the prove of first coincides with $O(s)$.
Neglectury the magnety part of perfect works with $O(s)$, the
 $O(c,t,w) = O(s) + O(s) + O(s) + O(s)$.
Tobard the referencest pape copies (3), we will now obtain
 $O(c,t,w) = O(s) + O(s) + O(s)$.
 $O(ce - and trice subtracted disperse relations for $O(s)$.
 $O(ce - and trice subtracted disperse relations
of $O(s,t) = O(s) + O(s) + O(s) + O(s)$.
 $F(s) + C_{1}(t) + F(s) O(s) + F(s) + O(s) + O($$$



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Note that these dispersion relations already exhibit symmetry under Scar for fixed t, whereas symmetry under scart for fixed it is not nourifost leget). In order to impose this symmetry, we appaud the absorptive part of F(site) in particul waves and write

this according to

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 $Im \mathcal{F}(s';t) = Im f_i(s') + Im \overline{\mathcal{P}}(s';t),$

Where her \$ (s'it) contains the ligher particl waves with 138, i.e.

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With this decamposition, we can write the dispersion relations as

 $f(s_{i}t) = C_{1}(0) + \frac{1}{\kappa} \int ds' \frac{1}{s_{i}} \int ds' \frac{1}{s_{i$

 $\frac{1}{4\pi}\int_{ds'}^{\infty} \frac{h_{fi}(s') + h_{i} \oint (s'_{i}t)}{s'_{i}} \left(\frac{s}{s'-s} + \frac{u}{s'-u} \right)$

 $= C_{1}(0) + F_{1}(s') + S_{1}(s') + S_{$ { (1)

(2)

 $+ \frac{1}{k} \int_{M_{1}^{2}} \int_{S^{1}} \int_{S^{1}} \int_{S^{1}+E} \frac{1}{s^{1}+t} \frac{3hx^{2}-t}{s^{1}+t} \int_{S^{1}} \int_{M_{1}^{2}} \frac{1}{s^{1}+t} \int_{S^{1}} \int_{M_{1}^{2}} \frac{1}{s^{1}+t} \int_{S^{1}} \frac{1}{s^{1}+t} \int_{S$

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