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Symbol: TM-49

Group Ref: TMG-M22

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This document consists of 9 pages

March 21, 1952

MINUTES OF THE TWENTY-SECOND MEETING OF THE THEORETICAL MEGATON GROUP

19 March 1952

1. The twenty-second meeting of the TMG convened at 9:00 AM on Wednesday, 19 March 1952, in the W-Division Conference Room. Those present were:

G. Bell	M. G. Holloway
H. A. Bethe	R. M. Landshoff
W. Bouricius	C. L. Longmire
K. Boyer	J. C. Mark, Chairman
A. A. Broyles	H. L. Mayer
E. D. Cashwell	L. W. Nordheim
R. F. Christy	W. E. Ogle
F. de Hoffmann	J. C. Potts
C. Evans	O. W. Rechard
F. Evans	F. Reines
D. K. Froman	J. R. Reitz
R. L. Garwin	M. Rosenbluth
W. B. Goad	P. R. Stein
R. W. Goranson	J. L. Tuck
G. M. Grover	S. M. Ulam

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Henyey (Matterhorn Project) has prepared a similar type of calculation for the SEAC.

4. Jet Observations in the Snapper Test.

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With three such jet devices spaced along the axis of the channel it was hoped to get jet displacement as a function of time with the fast framing cameras (3 per μsec) and thus some measure of radiation pressure as a function of distance down the channel. The upper and lower jet velocity limits for observational purposes are 200 and 7 cm/μsec.

Evacuated glass tubes would be used for the jet path if it is certain the luminosity induced by gamma rays would not obscure that emanating from the jets.

For an experiment of this kind one would want a completely different housing design than the one presently designed for the purpose of finding out if radiation flows as expected.

It was felt that the suggestion of Tuck should be accepted provided this additional material did not jeopardize any of the presently proposed experiments.

5.

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Rosenbluth remarked that this will introduce a new and difficult timing problem.

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6. [redacted] (b)

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[redacted] checked the specific range of practicable mixtures having the required mechanical properties.

7. Radiation Flow Calculations (de H[illegible]ffmann, [illegible]idstein)

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The problems were again divided into two parts: part I from zero time until the radiation front reaches the far end of the channel, and part II on from this time. The basic treatment of the problems followed the outline given in previous minutes but the following will serve to amplify each part (notation as before).

Part I

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These results can be understood more fully by referring to the relation of y_o and T_1 for a simple Marshak wave (LAMS-1210):

$$y_o(t) \sim \frac{\left\{ \int_o^t T_1(t)^{4+\ell}\, dt \right\}^{1/2}}{T_1^{\ell}(t)}$$

However $T_{1\ av}$ should be related to the average H.E. temperature. Assume it is directly proportional, $T_{1\ av} \approx T_{HE}$.

R. W. Goranson

Distribution:

1A - H. H. Barschall
2A - H. A. Bethe
3A - W. Bouricius
4A - N. E. Bradbury
5A - S. W. Burriss
6A - B. G. Carlson
7A - F. de Hoffmann
8A - F. Evans
9A - B. E. Freeman
10A - D. K. Froman
11A - R. B. Gibney
12A - R. W. Goranson
13A - A. C. Graves
14A - L. E. Hightower
15A - M. G. Holloway
16A - F. C. Hoyt
17A - E. R. Jette
18A - R. M. Landshoff
19A - R. B. Lazarus
20A - C. L. Longmire
21A - J. C. Mark
22A - H. L. Mayer
23A - N. Metropolis
24A - L. W. Nordheim
25A - W. E. Ogle
26A - L. G. Peck
27A - F. Reines
28A - J. R. Reitz
29A - R. D. Richtmyer
30A - M. Rosenbluth
31A - R. W. Spence
32A - P. R. Stein
33A - E. Teller
34A - J. L. Tuck
35A - S. M. Ulam
36A - M. C. Walske
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Table 2