

MINUTES OF THE THIRD MEETING OF THE SUB-COMMITTEE FOR AUTOMATION OF
MICROSCOPE MEASUREMENTS IN NUCLEAR EMULSION PHYSICS (OPEN MEETING).

CERN, ~~June~~ 29th, 1965.

PRESENT

COMMITTEE

S.J. BOSGRA	Amsterdam	
M.J.B. DUFF	U.C. London	Chairman
W.D. LOCK	CERN	Chairman (part-time)
E. LORENZ	Munich	
M.A. ROBERTS	CERN	
P. VOLMER	Strasbourg	
D. WISKOTT	CERN	

OBSERVERS AND INVITED PARTICIPANTS

J.P. ALARD	Clermont-Ferrand	D.T. GOODHEAD	Oxford
J. BERMOND	Caen	C. GUERRIER	Paris
M. BERNHEIM	Paris	J.C. KLUYVER	Amsterdam
H. BRAUN	Strasbourg	R. LLOSA	CERN/Valencia
C. CARLES	Bordeaux	C. METZGER	Neuchâtel
J. CATALA	Valencia	J.C. MONTRET	Clermont-Ferrand
G. CHARRIERE	Lausanne	M. MORAND	Paris
E. CHRISTOPHEL	Strasbourg	M. PICCAND	SEN, Geneva
H. CLAUSSEN	Wetzlar	P.J. PONTING	CERN
J.C. COMBE	CERN	B. ROSSEEL	Bell Company, Antwerp
E. DAHL-JENSEN	CERN	V. SCHEUING	Munich
N. DOBLE	CERN	G.K. SHAW	U.C. London
M.P. DOPORTO	Valencia	W. SPINKS	Rutherford Lab., Didcot
D. EVANS	CERN	E. VILLAR	Valencia
J.C. FAYOLLE	Paris	K. WEBER	Wetzlar
		U. von WIMMERSPERG	Oxford

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1. Minutes of last meeting

W.O. Lock opened the meeting and welcomed the committee and observers to CERN. He proposed to approve the minutes of the last meeting of the sub-committee, held at UCL on September 28th, 1964. This was agreed. W.O. Lock then handed over the Chair to M.J.B. Duff, as he had to attend another meeting.

2. Discussion of prototype digitized microscope - comments and criticisms

M.A. Roberts opened the discussion by reading a letter from J. Sacton, Brussels, who had made some tests on the digitized microscope during the previous week. The main point mentioned by J. Sacton was that the digitized microscope gave a factor of two to three advantage in scanning time in comparing measuring in the conventional way in Brussels and repeating the same measurements on the digitized microscope at CERN. For the purpose of the Brussel's scanning programme the chief criticisms were that the precision in the Z motion should be 1μ instead of 2.5μ and that the X and Y motions should be a little easier to manipulate. J. Sacton also suggested that for studies of hyperfragments, in particular for measurements of very short range particles, the microscope should be fitted with a filar eyepiece digitized in the X and Y planes, giving a very much higher precision of measurement.

The meeting was then open to discussion.

Many interesting points were raised, the main criticism being the 2.5μ precision in the Z motion, and it was generally felt that rather more refined X and Y motions would be desirable. P. Volmer pointed out that to have a successful Z motion, measuring to 1μ , the stage would have to be improved. M.A. Roberts stated that in view of the experience on the prototype, a 10 cm movement instead of 15 cm on the X motion would not only improve the precision of the stage, but would assist greatly in the ease of regulating the ruled grating.

M. Bernheim asked what immediate use in physics had been envisaged for the microscope. D. Evans explained his plan of using it for the evaluation of the data obtained from emulsion experiments on the magnetic moment of hyperons.

K. Weber from Leitz mentioned that at the moment they could not see a better solution of using the Ortholux as a digitized microscope other than that used by M.A. Roberts.

3. Discussion on future needs and possibilities to build copies of the prototype microscope

M.A. Roberts mentioned that due to the heavy load of work on the CERN Electronics group, it would be very difficult for them to provide further help in any future programme of building digitized microscopes. On the question of price, M.A. Roberts said that the cost of the prototype was about 35,000 Sw.Frs. It should be remembered that certain parts already existed in CERN; therefore this figure was a lower limit.

Mr. Piccand, from the "Société d'Electronique Nucléaire", when asked for an indication of cost if some or all of the electronics were constructed by them, gave the following approximate figures:

- a) Electronics complete: about 47,000 Sw.Frs. (without encoders, which would cost approximately 4,500 Sw.Frs.).
- b) Electronics with no memory, no punching machine, no typewriter, no encoders: about 27,000 Sw.Frs.

If more than 10 pieces were ordered together, the price per piece might be about 20% lower than these figures. The delivery time, if ordered now, would be Spring 1966. Mr. Piccand made the remark that these same electronics could be well adapted for machines for the evaluation of bubble chamber films.

After some discussion it was clear that due to many difficulties, e.g. financial and custom duties, it was impossible for the individual laboratories to arrive at any decisions about block purchases at this meeting.

W.O. Lock, having rejoined the meeting, suggested that people, on having seen the microscope, should consider their needs and possibilities between now and the next Emulsion Committee meeting on September 6th. At this meeting the question could be reconsidered and all people interested (including representatives from industry) should feel free to attend the discussion on this particular point of the agenda. Further he suggested that perhaps several laboratories could join forces in making or buying a few microscopes between them, which could then be jointly used as and when necessary.

The question was asked when a publication would be available. M.A. Roberts said that almost all mechanical and technical drawings were finished and he hoped to be able to distribute complete copies in the form of a CERN Yellow Report early in the autumn.

4. Decisions further to item 3

M.A. Roberts asked to be kept informed of any decisions made by individual laboratories to construct or to purchase parts or complete microscopes from industry.

H. Claussen invited M.A. Roberts to visit Leitz for discussions and to see their type of instruments, stages, etc., that already exist in view of possible adaptations to the existing system and possible improved Z motions.

5. Report on U.C.L. track following microscope

M.J.B. Duff gave a brief résumé of the present state of the track following microscope developed by him in London; it now follows minimum tracks of 18 grains per 100 μ , at a maximum speed of 10 mm/min. He reported that on July 4th the whole microscope will be transported to Strasbourg where P. Volmer will continue the studies of this instrument. The latter explained his programme of additions and improvements to this microscope (recognition possibility, etc.) and mentioned that the probable cost of such a microscope would be extremely high.

6. Any other business: None

7. Next meeting

To be decided at next Emulsion Committee Meeting (6th September, 1965).

M.A. Roberts.