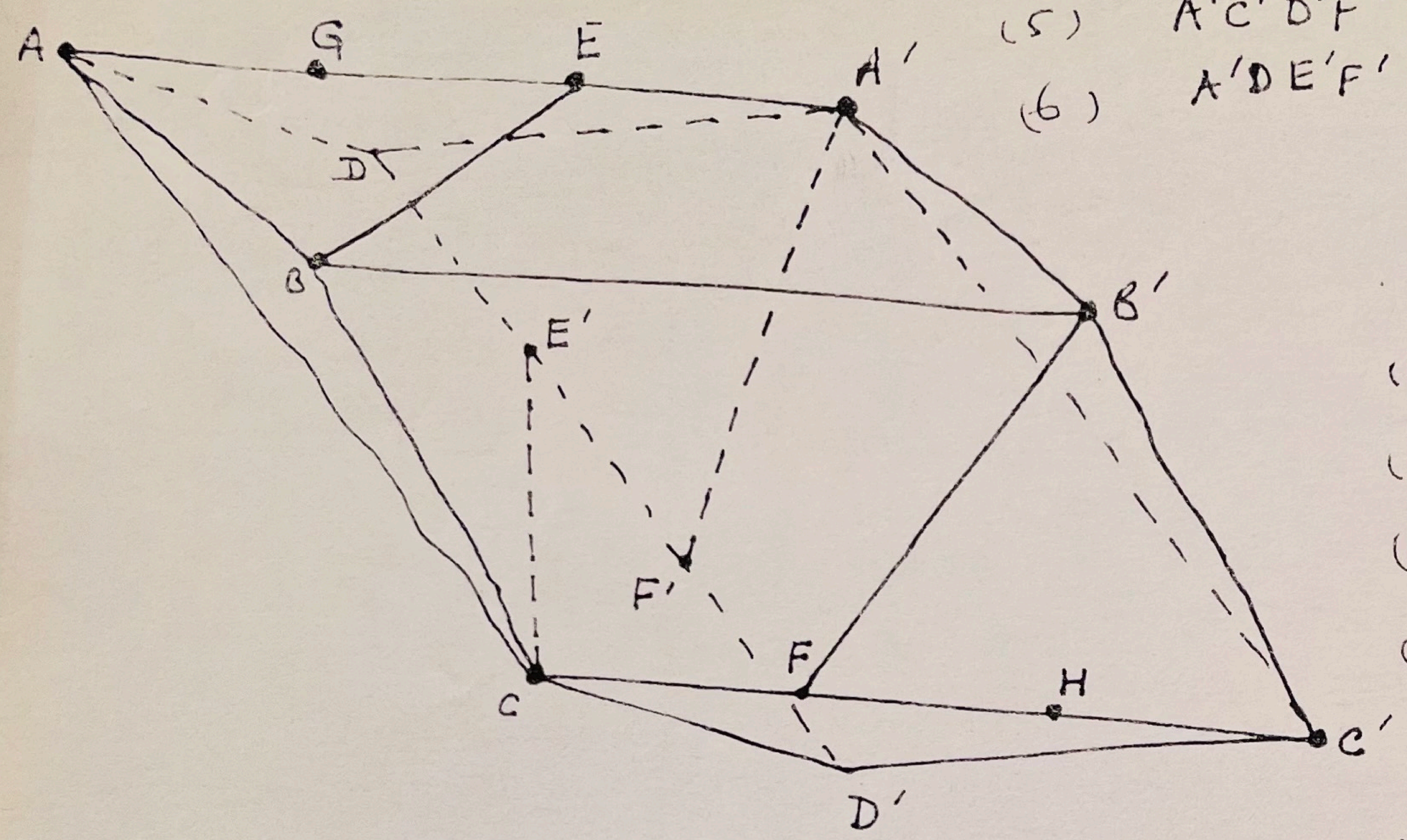
no. of 3-cells $f_3 = 1$

no. of 2-cells $f_2 = 6$:

M^3 space is obtained on following ein-stein by identifications of face pairs (1) – (6) →



(1) $ABC = A'B'C'$

(2) $AGEA'D = CFHC'D'$

(3) $ADE'C = BEA'B'$

(4) $E'F'D'C = AGEB$

(5) $A'C'D'F' = BB'FC$

(6) $A'DE'F' = B'FHC'$

no. of 1-cells $f_1 = 6$:

(i) $AC = A'C' = BB'$

(ii) $BC = B'C' = A'F'$

(iii) $AB = A'B' = E'C$

(iv) $CD' = AD = BE$

(v) $D'C' = DA' = FB'$

(vi) $CF = F'D' = GE = FH = DE' = EA' = HC' = E'F' = AG$

no. of 0-cells $f_0 = 1$:

$A = A' = B = B' = E' = C = C' = F' = F = D = D' = E = G = H$

Eu. char $= f_0 - f_1 + f_2 - f_3 = 0$. So M^3 is a closed 3-mfld (orientable)

Incidences:

$$\begin{array}{cc} & \text{2 cells} \\ \text{3 cells} & \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \end{array}$$

$$\begin{array}{cc} & \text{0 cells} \\ \text{1 cells} & \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix} \end{array}$$

1-cells / 2 cells	(i)	(ii)	(iii)	(iv)	(v)	(vi)
(1)	-1	1	1			
(2)	[illegible]			-1	-1	3
(3)	-1		1	1		1
(4)			-1	-1	[illegible]	2
(5)	1	-1			-1	-1
(6)		-1			-1	2

→ eqvt. to (over $\mathbb{Z}$) $\begin{bmatrix} 5 & 0 \\ 0 & I \\ & 5.5. \end{bmatrix}$

$0 \leftarrow C_1 \leftarrow C_2 \leftarrow C_3$

is

$\mathbb{Z} \xleftarrow{0} \mathbb{Z}^6 \leftarrow \mathbb{Z}^6 \xleftarrow{0} \mathbb{Z}$

So homology is ~~that of a 3-sphere~~? $H_0(M^3) \cong H_3(M^3) \cong \mathbb{Z}$

$H_1(M^3) \cong \mathbb{Z}/5$

$H_2(M^3) \cong 0$

~~Is $M^3 \cong S^3$? or is M^3 a homology 3-sphere with $\pi_1 \neq 1$?~~

~~Calculate π_1 ...~~

Maybe M^3 is a Lens space?

To Prof. Danzer: as above shows it is possible that one may obtain interesting 3-manifolds from your ein-steins

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13.3.95