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W/E 10/31 1978

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2/

right now in the article

$$| ds^2 = g_{\mu\nu} dx^\mu dx^\nu$$

position  
position

3/

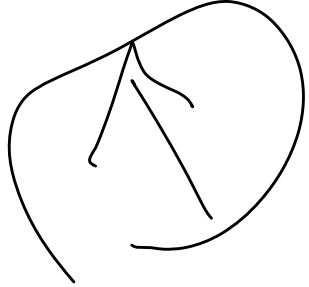
עקומת אינטגרל

1. ה וואקסא הילש'ן עקומה

עיסאלצ'ן קראש לואך

ה עקומה

2. ה וואקסא \* עקומה  
ו' עקומה

$$4) \Rightarrow \frac{d u^\alpha}{d \lambda} + \Gamma_{\beta\gamma}^\alpha u^\beta u^\gamma = 0$$



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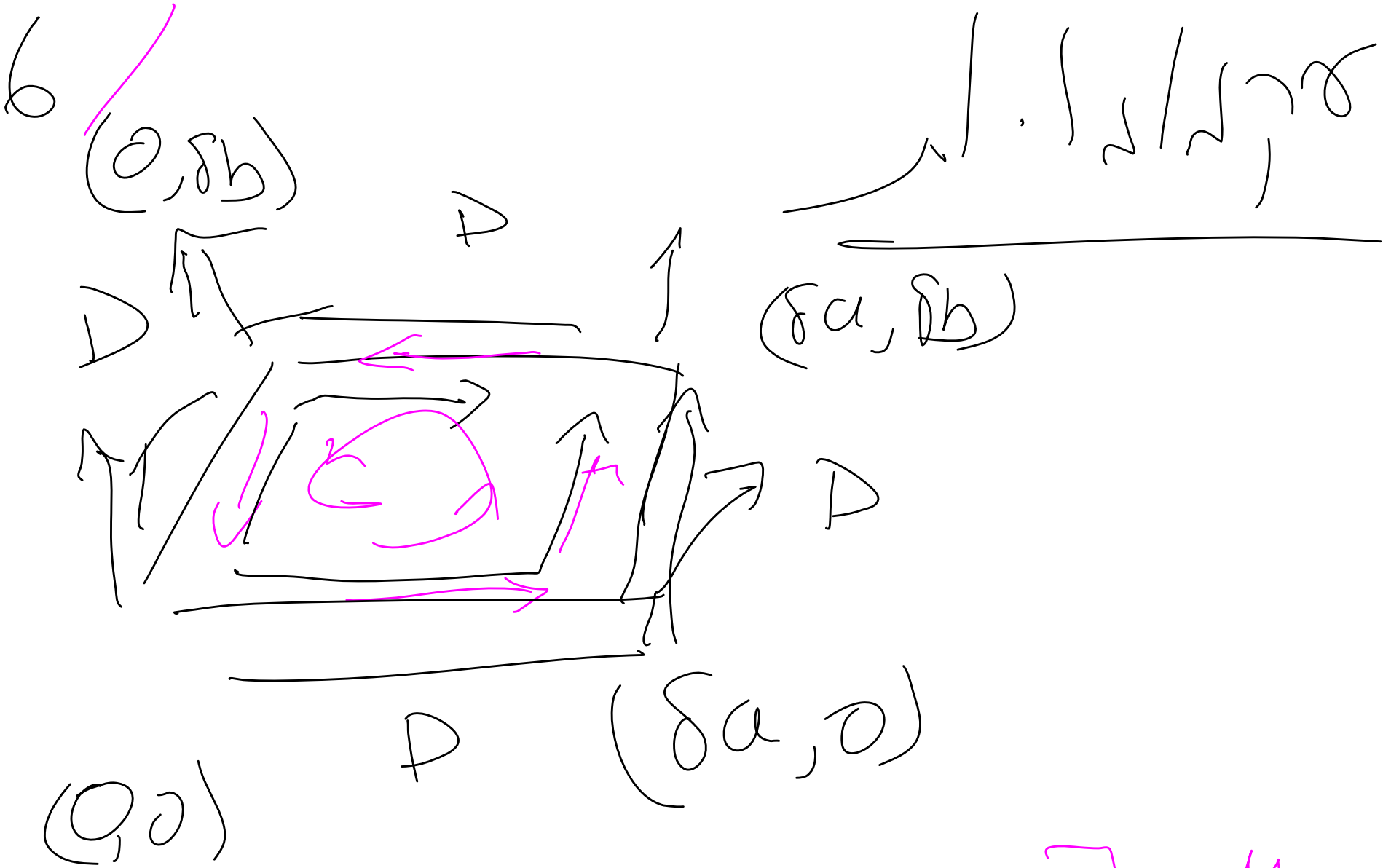
ההתנהגות והקס'ים של קראטר

המסלול ה"פלו"ר  
 של גופים "מאב"ים  
 ש"מ"ם ו"מ"ם

5 / "Life is a game" - "Life is a game"  
 "Life is a game" - "Life is a game"

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"Life is a game" - "Life is a game"  
 $\frac{dx^2}{dx^2} + \mu_0 \frac{dx^4}{dx^4} = f$   
 "Life is a game" - "Life is a game"



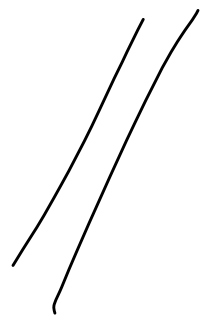
$$\delta V^\mu = \delta a^\alpha \delta b^\beta [D_\alpha, D_\beta] V^\mu$$

$$7 / \quad [D_\alpha, D_\beta] V^\mu = R^\mu{}_{\nu\alpha\beta} V^\nu$$

from (1) & (2)

$$R^\mu{}_{\nu\lambda\sigma} = \partial_\lambda \Gamma^\mu{}_{\nu\sigma} - \partial_\sigma \Gamma^\mu{}_{\nu\lambda} +$$

$$\Gamma^\mu{}_{\lambda\sigma} \Gamma^\sigma{}_{\nu\lambda} - \Gamma^\mu{}_{\lambda\sigma} \Gamma^\sigma{}_{\nu\lambda}$$



$$\delta / R^{\mu}{}_{\nu\lambda\sigma} = 0 \quad \text{for}$$

1. 1325  $\mu\nu$  :  $\mu, \nu \in \{1, 2, 3\}$

2.  $\mu, \nu \in \{1, 2, 3\}$

$$g_{\mu\nu} = \eta_{\mu\nu}$$



1) /

$$R_{\mu\nu\lambda\sigma} = -R_{\sigma\mu\lambda\nu} \quad (1)$$

$$R_{\mu\nu\lambda\sigma} = -R_{\sigma\lambda\mu\nu} \quad (2)$$

$$R_{\mu\nu\lambda\sigma} = R_{\lambda\sigma\mu\nu} \quad (3)$$

$$R_{\mu\nu\lambda\sigma} + R_{\mu\sigma\nu\lambda} + R_{\mu\lambda\sigma\nu} = 0 \quad (4)$$

10/

קוואנטום

$$D_S R_{\mu\nu\lambda\sigma} + D_\mu R_{\nu\rho\lambda\sigma} + D_\nu R_{\sigma\mu\lambda\sigma} = 0$$

$$\left[ [D_\mu, D_\nu], D_\lambda \right] + \left[ [D_\lambda, D_\mu], D_\nu \right] + \left[ [D_\nu, D_\lambda], D_\mu \right] = 0$$

ספירה כ'ד'ם בל'ת'ר'א'ם  
 של ארצ'א'ד' ה'ת'א'ן

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$$4^4 = 256 -$$

2 א'ל'ת'ר'א'ם  $\leftrightarrow$  ג'ר'א'ם  $\rightarrow$  א'ל'ת'ר'א'ם  
 $\# = \frac{1}{2} D(D-1) \rightarrow$  ג'ר'א'ם של א'ל'ת'ר'א'ם

12/

אנחנו צריכים

$$n = \frac{1}{2} D(D-1) \quad 3 \text{ נ"נ}$$

$$H = \frac{1}{2} n(n+1)$$

$$H = \frac{1}{2} \cdot \frac{1}{2} D(D-1) \cdot \left( \frac{1}{2} D(D-1) + 1 \right)$$

אנחנו צריכים  
 לפתור את המשוואה  
 $H = \frac{1}{8} D(D-1)(D(D-1)+2)$

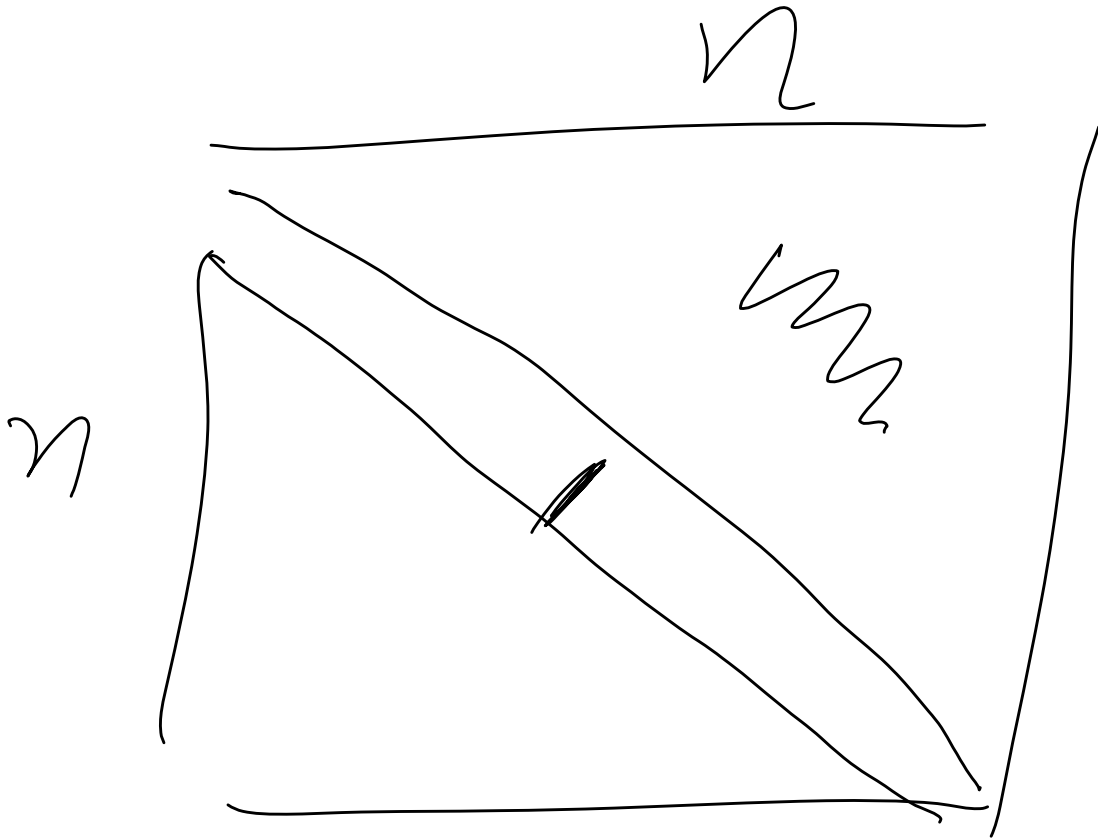
13/

$$\# \binom{D}{4} = \frac{D(D-1)(D-2)(D-3)}{4!}$$

$$\# = \frac{1}{12} D^2 (D^2 - 1)$$

$$D = 4 = 20$$

14)



$$\frac{n^2}{2} + \frac{n}{2} = \frac{n(n+1)}{2}$$

