FAXBERICHT

Aan: S. Falkena

Van: H. Jordens

Bericht: Adres in Moscow:

p/a Dr. E. Yunosov
Vice-president of the YPT
MSU, STC "University"
Moscow, 117234, USSR

tel: 09 - 095 - 3166516

fax: 09 - 095 - 2926511

vluchtnummer heen: OS 482 (via Wenen)
terug: OS 483 (via Wenen)

Third round. Opponent Gun-lift.

* ~~Too~~ Far less said about the parameters of the ring ~~or~~, except material:
  e.g. mass;
  height;
  form
* Leaks in the core.
* Optimalisation.
* ~~Geen verwerking van resultaten.~~
* Geen goede theorie voor het beste resultaat.

  Of formule

- least irrealistic.
- difficult stuff. mention all type.

$$P_{loss} = \frac{2e^2c}{3r^2}\left(\frac{E}{mc}\right)^4 \Rightarrow \text{wave.}$$

mass

Dominoes - Quarta.

~~Mathem~~

~~Development~~

- Thickness of ~~domino~~ domino 44,5 + 0,70
  > 4 4,5 mm
- Little distance (< 7 mm) centre of mass above ~~contact point~~ centre of rotation.
- Stock (angular impulse) / energies.
- Friction (~~don't loose energy~~)
- Acceleration when falling?
- Mass does matter?

Opponent didn't ~~see~~ mention all of the mistakes.

Opponent EARTH

Jekaterina
Prekrh

~~H-* T ? G?~~ ?

Heeft hij de
baan en de zon
al beschreven?
(wel dat hij niet !!
meer ovaal wordt)

* Orbit: distance to sun.
  how changes?
* Good calculations for change in radius of earth.
  Too long on one subject.
* with its consequences.
* Very many "some" deficits:
  - gravity acceleration.
  - escape speed.
  - ~~c~~ pressure and temperature.
* ~~Not taking into account change of temper. bec~~
  Consequences for temperature.
* Few aspects
  parameters.

How changes orbit of earth?

- ice
- ~~cool~~ time of revolution of earth.
- biological aspects.

Semi-finals 23/6/93

1 Dekraine presents dominoes.

- Horizontal velocity in place of ~~centrifugal~~ resulting velocity. ?
- Which ω, of first of ~~constant~~ following domino?
- Average (renamed) velocity on an interval. Not the development of the velocity. – Which sizes?
- How ~~hard~~ the dominoes are? Which minimum distance?
- Loss of energy? Friction of air

Good theoretical and practical elaboration.

Results of experiments. Graphics of theory & experiments.

4 min.
5 min

* Theoretical minimum distance
make the first one fall.
* Verwerking resultaten experimenten [VRAAG].
* Meting van de snelheid
only average.
* Aanloopstrook.

How many dominoes?

Corresponding
practice ⟷ theory.

Ukr.	Pr	4	4	3+	4	~~4~~	~~3~~			= 4
WK	Op	~~5~~	4+	4+	~~4~~	5	5			= 5
Pol.	Be	4	5	~~5~~	4+	4+	5	~~5~~		= 4+

$$\alpha = \arcsin \frac{h}{x}$$

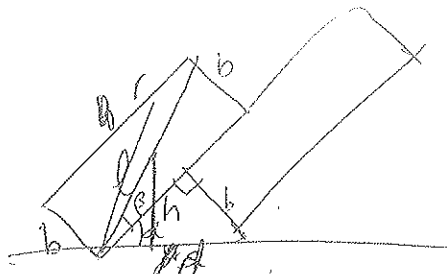
$$Q = \frac{3}{2} I \omega^2$$

$$\Delta H = \frac{1}{2}\left[l\left(1 - \frac{h}{h+x}\right) - h\sqrt{1-\left(\frac{h}{h+x}\right)^2}\right]$$

$$\omega = \sqrt{\frac{g}{l^2+h^2}\left[l\left(1-\frac{h}{h+x}\right) - h\sqrt{1-\left(\frac{h}{h+x}\right)^2}\right]}$$

$$t = \frac{\alpha}{\omega} + \frac{h}{c}; \quad v = \frac{h+x}{t}$$

$$v = \frac{h+x}{\arcsin\frac{h}{l}\sqrt{\frac{l^2+h^2}{g}} \Big/ \left[l\left(1-\frac{h}{h+x}\right) - h\sqrt{1-\left(\frac{h}{h+x}\right)^2}\right] + \frac{h}{c}}$$



$$l = \sqrt{r^2 + b^2}$$

$$\sin\alpha = \frac{b}{d}$$

$$\alpha = \arcsin\frac{b}{d}$$

$$\tan\beta = \frac{b}{r} \Rightarrow \beta = \arctan\frac{b}{r}$$

$$\sin(\alpha+\beta) = \frac{h}{l} \Rightarrow h = l\sin\left(\arcsin\frac{b}{d} + \arctan\frac{b}{r}\right)$$

$$\sin(a+b) = \sin a\cos b + \sin b\cos a$$

$$h = l\left(\frac{b}{d}\cdot\frac{r}{\sqrt{b^2+r^2}} + \frac{b}{\sqrt{b^2+r^2}}\cdot\frac{\sqrt{d^2-b^2}}{d}\right)$$

$$\sqrt{b^2+r^2}\,' = \frac{1}{2}\sqrt{b^2+r^2}\left(\quad\right)$$

$$r\,' = \frac{1}{2}\left(\frac{b\cdot r}{d\,(b^2+r^2)} + \frac{b\cdot\sqrt{d^2-b^2}}{(b^2+r^2)\,d}\right)$$

$$\sqrt{d^2-b^2}\,' = l\,\frac{b}{2d(b^2+r^2)}\cdot\left(r+\sqrt{d^2-b^2}\right)$$

$$\Rightarrow h' = \frac{1}{2}\left(r - \frac{rb}{d(b^2+r^2)} - \frac{b\sqrt{d^2-b^2}}{d(b^2+r^2)}\right)$$

$$(\Delta h)' = \frac{rb}{2(b^2+r^2)\,d^2} + \frac{b\sqrt{d^2-b^2}}{2(b^2+r^2)\,d^2} = 0$$

$$b = 0,\ 7^0 \qquad \frac{rb + b\sqrt{d^2-b^2}}{2d^2(b^2+r^2)} = 0$$

$$b\left(r+\sqrt{d^2-b^2}\right) = 0$$

$$d^2 + d^2 - b^2 = 0$$

$$d^2 = b^2 - r^2$$

$$d = \sqrt{b^2-r^2}$$

$$rb = -b\sqrt{d^2 - b^2}$$

$$-r = \sqrt{d^2 - b^2}$$

$$d^2 - b^2 = r^2$$

$$d^2 = b^2 + r^2$$

$$d = \sqrt{b^2 + r^2}$$

Roles played by each member of the team

	Rep.	Opp.	Rev.
Chris Barber	—	1	—
Wheeky	3	1	—
Chris Jeffs.	1		
David	—		
Petra	1	—	—

	Rep.	Opp.	Rev.	Tot.
Chris B.	—	1	—	
Wheeky	3	1	—	
Chris J.	1	1	3	
David	—	2	2	
Petra	1	—	—	

[*] Chris J. presents boiling.

Pr	CJ	4	4	3+	4	~~3~~		~~3+~~
Op	Pol.	5	4+	4+	~~4~~	4+	~~5~~	4+
Be	Ukr.	4	5+	5	5	5	5	5

Het wordt erg spannend

[*] → Poland presents recharge

~~[illegible]~~

~~[illegible]~~
1 Variërende spanning.

2 Theoretisch ook beredeneren!
~~[illegible]~~ veel/weinig windingen ?

~~[illegible]~~

3 Slechte redenering voor laag rendement.
Losses are neglected!!

~~4 Waarom U_2 = 80 tot 90 V ?~~

Te berekenen.

Simple ~~[illegible]~~ and clear explanation.

~~Terrible mistake about number of turns~~

* Question: efficiency from theory or from experiments?
If from theory, it is wrong.

$$\eta = \frac{\text{ENERGY INPUT}}{\text{ENERGY OUTPUT}}$$ (schrijven ze zelf)

Natuurlijk zijn deze twee theoretisch gelijk, daar zijn ze zelf van uitgegaan $\left(\frac{C_1 U_1^2}{2} = \frac{C_2 U_2^2}{2} \right)$

~~Wat bedoeld is~~

Het rendement is natuurlijk niet theoretisch te berekenen

---

ze hebben 100 aangenomen

$$\frac{C_2}{C_1} \left(\frac{U_2}{U_1} \right)^2 = \frac{1}{1000} \cdot \left(\frac{100}{10} \right)^2$$

$$= 0{,}1 = 10\%$$