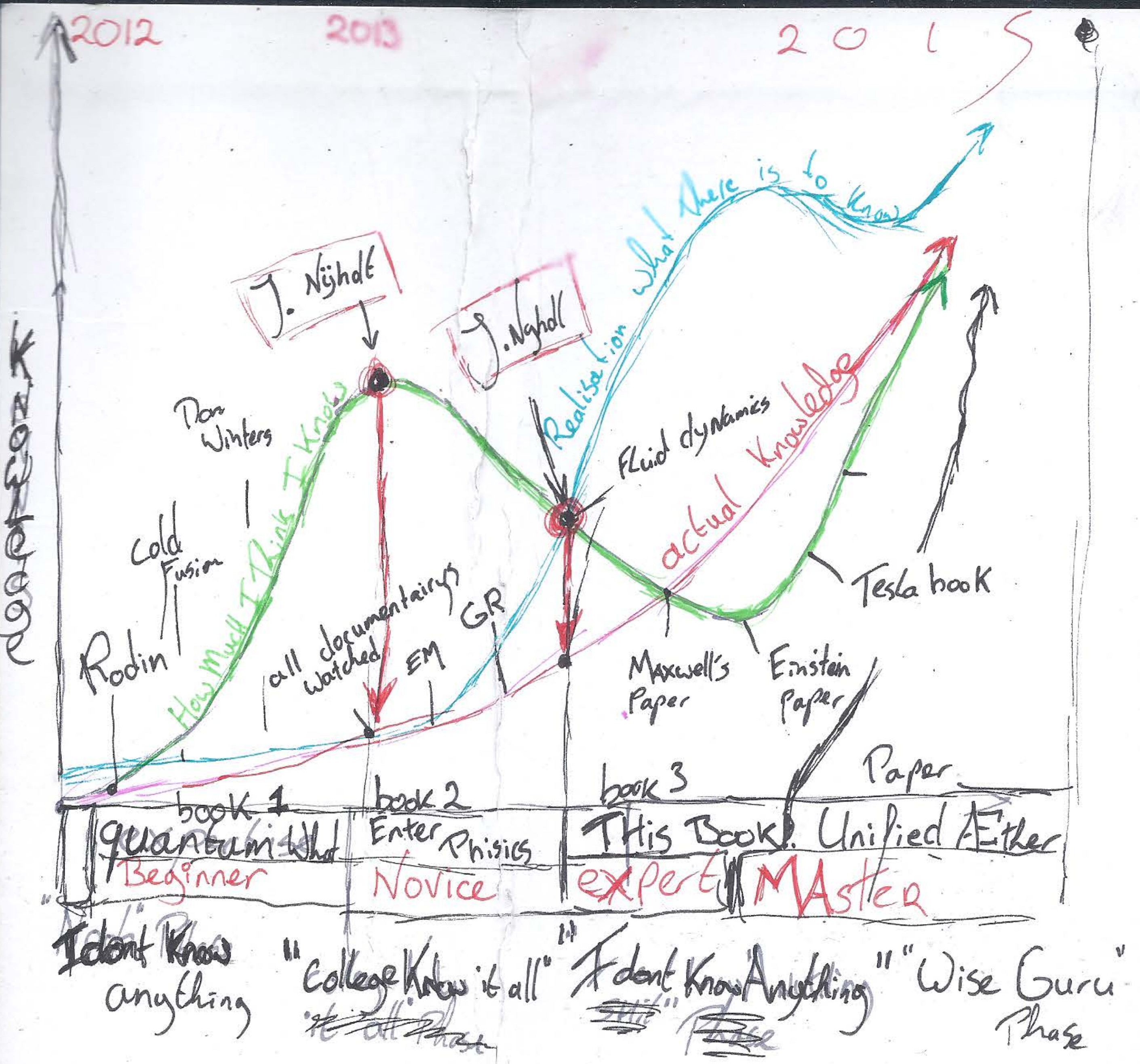
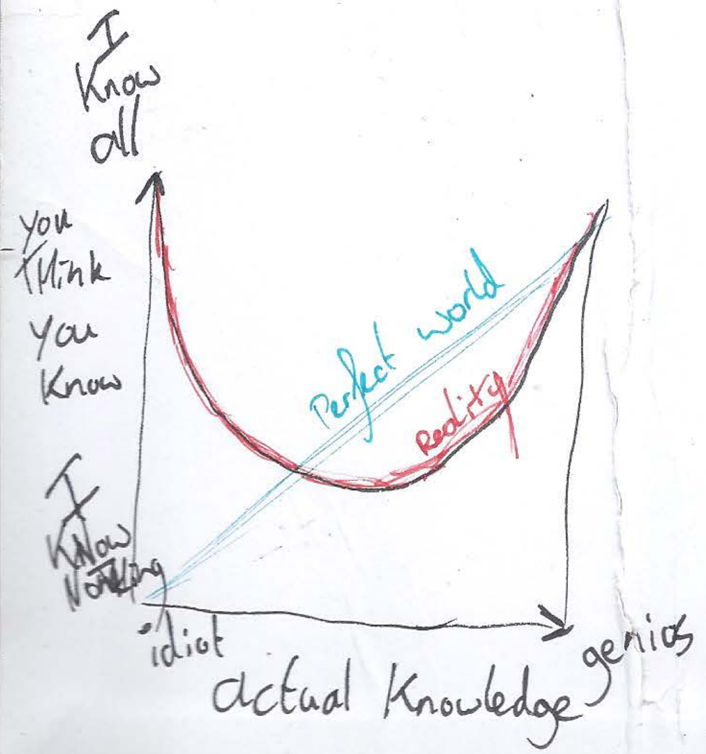
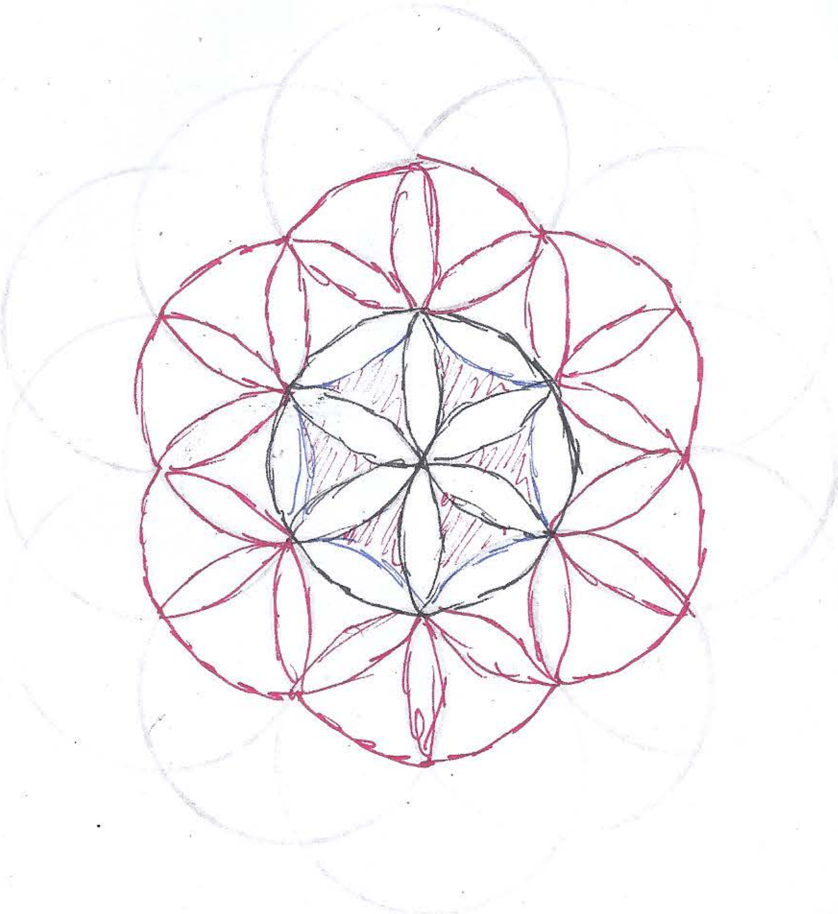

2012
2013
2015
Knowledge
J. Nijhdt
J. Nijhdt
Don Winters
Cold Fusion
Rodin
How Much I Think I Know
all documentairys watched
EM
GR
Realisation what there is to know
Fluid dynamics
actual Knowledge
Tesla book
Maxwell's Paper
Einstein Paper
book 1
book 2
book 3
Paper
quantum What
Enter Phisics
THis Book
Unified Æther
Beginner
Novice
expert
MAster
"I dont Know anything"
"College Know it all"
"I dont Know Anything"
"Wise Guru" Phase


I Know all
you Think you Know
I Know Nothing
Perfect world
Reality
idiot
genius
actual Knowledge



Zwaartekracht is de aantrekking tot Licht

Licht reist Niet

alle materie in beweging zoekt Naar rust

Licht = Rust

Maxwell

E = Volt

$$\oint E \cdot \partial A = \frac{\sum q}{\varepsilon_0}$$

$$\oint B \cdot \partial A = 0$$

$$\oint E \cdot \partial L = -\frac{\partial \phi_b}{\partial t}$$

$$\oint B \cdot \partial L = \mu_0 I + \mu_0 \varepsilon_0 \frac{\partial \phi_e}{\partial t}$$

$$\nabla \cdot V = \frac{\partial V}{\partial x} + \frac{\partial V}{\partial y} + \frac{\partial V}{\partial z}$$

$$\nabla \cdot E = \frac{\rho}{\varepsilon_0}$$

$$\nabla \cdot B = 0$$

$$\nabla \times E = -\frac{\partial \phi_b}{\partial t}$$

$$\nabla \times B = \mu_0 \left(I + \varepsilon_0 \frac{\partial \phi_e}{\partial t} \right)$$

$$\int V \cdot \partial A = \int \nabla \cdot V \, \partial v$$

$$\int V \cdot \partial L = \int \nabla \times V$$

$$\nabla \times V = \left(\frac{\partial V_z}{\partial y} - \frac{\partial V_y}{\partial z} \right) \hat{x} + \left(\frac{\partial V_x}{\partial z} - \frac{\partial V_z}{\partial V_x} \right) \hat{y} + \left(\frac{\partial V_y}{\partial x} - \frac{\partial V_x}{\partial y} \right) \hat{z}$$

$$\nabla f = \frac{\partial f}{\partial x} \hat{x} + \frac{\partial f}{\partial y} \hat{y} + \frac{\partial f}{\partial z} \hat{z}$$ f = bağıl temp

$$\nabla^2 V = \Delta V = \frac{\partial^2 V}{\partial x^2} + \frac{\partial^2 V}{\partial y^2} + \frac{\partial^2 V}{\partial z^2}$$

Vortex

Opp doorsnee Vortex

$$\Gamma = \int_A \vec{\omega} \cdot \vec{n}\, \partial A = \oint_c \vec{u} \cdot \partial \vec{s}$$

Vorticiteit

Normaal Vector

Snelheid Vector

absolute Vorticiteit = Relatieve Vorticiteit + Planetaire Vorticiteit

$\nabla \times \vec{V} = \zeta + f$

$$\boxed{\frac{\partial \Gamma}{\partial t} = 0} \quad \boxed{\frac{\partial(\zeta + f)}{\partial t} = 0}$$

$\boxed{\text{Vortexflux absolute Vortici Circulaties}}$

$$\frac{\partial \Gamma}{\partial t} = \oint \frac{\partial p}{\rho} + \oint \vec{G} \cdot \partial \vec{r} + \oint \frac{\mu}{\rho} \nabla^2 \vec{V} \cdot \partial \vec{r}$$

Verandr Circulatie = druk Krachten + Lichaam krachten irrotationeel $\vec{G} \cdot \partial r = 0$ + Physieke krachten

$$\vec{V} \times \vec{W} = \frac{1}{\rho} \nabla P_0$$

$$P_0 = P + \frac{1}{2} \rho V^2 + \rho U$$

Statisch

$\frac{1}{2} m v^2$

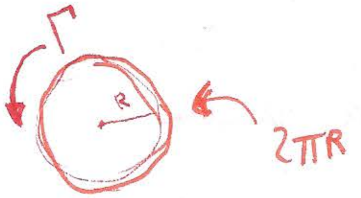
Lichaam druk

$$\vec{\omega} = \frac{1}{2}\left(\nabla \times \vec{V}\right)$$

$$\frac{1}{2}\begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ \frac{\partial}{\partial x_1} & \frac{\partial}{\partial x_2} & \frac{\partial}{\partial x_3} \\ V_{x_1} & V_{x_2} & V_{x_3} \end{vmatrix} = \frac{1}{2}\left[\frac{\partial V_{x_3}}{\partial x_2} - \frac{\partial V_{x_2}}{\partial x_3}\right]\hat{x}_1 + \left[\frac{\partial V_{x_1}}{\partial x_3} - \frac{\partial V_{x_3}}{\partial x_1}\right]\hat{x}_2$$

$$V_\theta(R,t) = \frac{\Gamma}{2\pi R}\left(1 - \exp\left(\frac{-R^2}{4\nu t}\right)\right)$$

$R_c^2(t)$



Vorticiteit = Circulatie per opp.

$$\hat{x}^2 + \left[\frac{\partial V_{x_2}}{\partial x_1} - \frac{\partial V_{x_1}}{\partial x_2}\right]\hat{x}^3 = \vec{\omega}$$

field pointer

$$\vec{A} = A_x + A_y + A_z$$

gradient

$$\text{grad}\, V = e_x \frac{\partial V}{\partial x_1} + e_y \frac{\partial V}{\partial y} + e_z \frac{\partial V}{\partial z}$$

∇V

divergence

$$\text{div}\, A = \frac{\partial A_x}{\partial x} + \frac{\partial A_y}{\partial y} + \frac{\partial A_z}{\partial z}$$

$\nabla \cdot A$

Curl (Vortex)

$$\text{Rot}\, A = \left(\frac{\partial A_z}{\partial y} - \frac{\partial A_y}{\partial z}\right) + \left(\frac{\partial A_x}{\partial z} - \frac{\partial A_z}{\partial x}\right) + \left(\frac{\partial A_y}{\partial x} - \frac{\partial A_x}{\partial y}\right)$$

$\nabla \times A$

Laplace Δ

$$\Delta A = \frac{\partial^2 A}{\partial x^2} + \frac{\partial^2 A}{\partial y^2} + \frac{\partial^2 A}{\partial z^2}$$

$$\text{div Rot}\, A = 0$$

$$A \times B = -B \times A$$

$$\text{div}(A \times B) = B \,\text{rot}\, A - A \,\text{rot}\, B$$

$$\text{Rot}(A \times B) = (B\,\text{grad})A - (A\,\text{grad})B + A\,\text{div}B - B\,\text{div}A$$

$$A \times (B \times C) = B \cdot (A \cdot C) - C \cdot (A \cdot B)$$

$$\nabla \cdot \nabla A = 0$$

$$\nabla \cdot (A \times B) = B(\nabla \times A) - A(\nabla \times B)$$

$$E = \frac{R}{N} T$$

R = gasconst
N = Nr molekule
T = absolute temp

$P_\nu \partial f$ = Energie tussen frequenties

$$E = \frac{c^3}{8\pi f^2} P_\nu$$

$$\frac{R}{N} T = \frac{c^3}{8\pi f^2} P_\nu$$

$$P_\nu = \frac{R}{N} \frac{8\pi f^2}{c^3} T$$

$$\boxed{\int_0^\infty P_\nu \partial f = \frac{8\pi}{c} T \int_0^\infty f^2 \partial f = \infty}$$

Limit

$$P_\nu = \frac{\alpha \nu^3}{e^{\beta\nu/T} - 1}$$

$\alpha = 6.10 \cdot 10^{-56} \approx R_{\text{Schwart Electron}}$ $1{,}35 \cdot 10^{-57}$

$\beta = 4.866 \cdot 10^{-11} \approx a_0$ Bohr ground $5{,}29 \cdot 10^{-11}$

Limit $P_\nu = \frac{\alpha}{\beta} \nu^2 T$

$$\frac{R}{N} \frac{8\pi}{c^3} = \frac{\alpha}{\beta}$$

of

$$N = \frac{\beta}{\alpha} \frac{8\pi R}{c^3} = 6{,}17 \cdot 10^{23}$$

$\frac{1}{N}$ = gewicht Waterstof Atoom

weerstand gelijke compressie

K = Bulk modulus

$$c = \sqrt{\frac{K}{\rho}}$$

$$K = -V \frac{\partial P}{\partial V}$$ Druk

$$K = \rho \frac{\partial P}{\partial \rho}$$ Dichtheid

force

$$K = \frac{F}{\delta}$$ ← verschil door kracht op 1 as

Stijfheid

intensieve eigenschap

extensieve eigenschap

$$K = \frac{M}{\phi}$$ ← Moment, ← rotatie

$$\frac{\partial v}{\partial x} = \frac{\partial V \hat{s}_y}{\partial x} = \frac{\partial V}{\partial x}\hat{s}_y + V\frac{\partial \hat{s}_y}{\partial x}$$

$$\frac{\partial u}{\partial \cancel{x}\,y} = \frac{\partial V \hat{s}_x}{\partial \cancel{x}\,y} = \frac{\partial V}{\partial \cancel{x}\,y}\hat{s}_x + V\frac{\partial \hat{s}_{\cancel{x}}}{\partial y}$$

$$\zeta = \frac{\partial v}{\partial x} - \frac{\partial u}{\partial y} = \frac{\partial V}{\partial x}\hat{s}_y - \frac{\partial V}{\partial y}\hat{s}_x + V\left[\frac{\partial \hat{s}_y}{\partial x} - \frac{\partial \hat{s}_x}{\partial y}\right]$$

$$= -\hat{n}_x \frac{\partial V}{\partial x} - \hat{n}_y \frac{\partial V}{\partial y} + V\left[\frac{\partial \hat{s}_y}{\partial x} - \frac{\partial \hat{s}_x}{\partial y}\right]$$

$$\zeta = -\frac{\partial V}{\partial n} + \boxed{V\frac{\partial \varphi}{ds}}$$

$$\zeta = -\frac{\partial V}{\partial n} + \boxed{\frac{V}{R}}$$

ruimte kromming
Vorticiteit

Behoud van Vorticiteit:

$$\frac{\partial}{\partial t}(\zeta + f) = 0$$

Planetaire Vorticiteit

$$\zeta_p = 2\Omega \sin(\varphi) = f$$

Relatieve Vorticiteit

$$\zeta = \frac{\partial v}{\partial x} - \frac{\partial u}{\partial y} = \zeta$$

absolute Vorticiteit

$$\zeta_a = \zeta + f$$

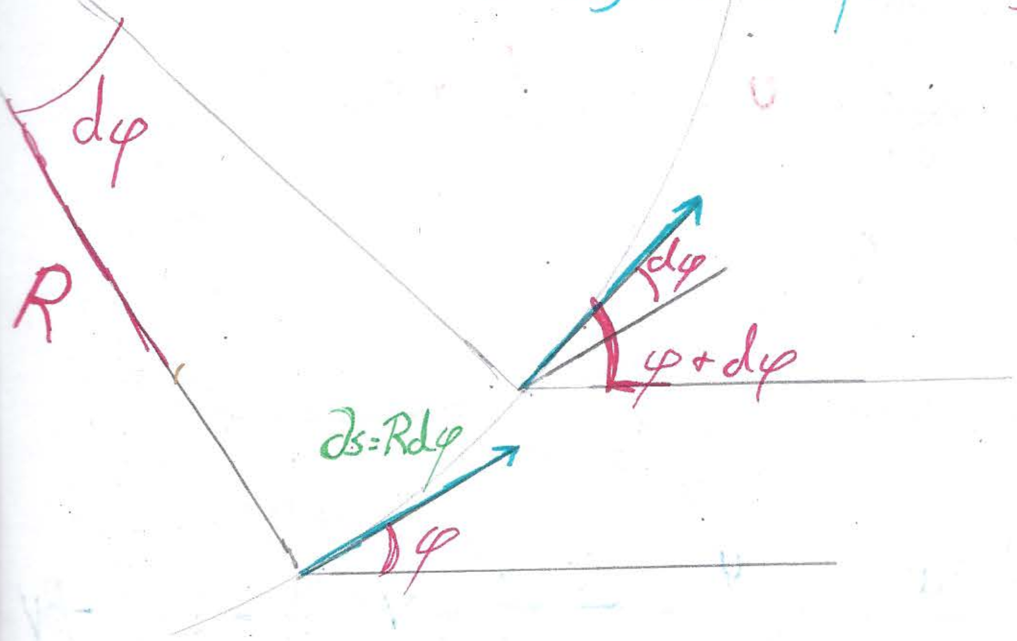
Potentiele Vorticiteit

$$\Pi = \frac{\zeta + f}{h}$$

$$\hat{s} = \begin{pmatrix} \hat{s}_x = \cos(\varphi) \\ \hat{s}_y = \sin(\varphi) \end{pmatrix}$$

$$u = V s_x = V\cos(\varphi) \qquad \hat{n}_x = -\hat{s}_y$$

$$v = V s_y = V\cos(\varphi) \qquad n_y = \hat{s}_x$$



$$\frac{\partial \hat{s}_y}{\partial x} = \frac{\partial}{\partial x} \sin(\varphi) = \cos(\varphi)\frac{\partial \varphi}{\partial x} = \hat{s}_x \frac{\partial \varphi}{\partial x}$$

$$\frac{\partial \hat{s}_x}{\partial y} = \frac{\partial}{\partial y} \cos(\varphi) = -\sin(\varphi)\frac{\partial \varphi}{\partial y} = \hat{s}_y \frac{\partial \varphi}{\partial y}$$

$$\frac{\partial \hat{s}_y}{\partial x} - \frac{\partial \hat{s}_x}{\partial y} = \hat{s}_x \frac{\partial \varphi}{\partial x} + \hat{s}_y \frac{\partial \varphi}{\partial y} = \frac{d\varphi}{ds} = \frac{1}{R}$$

Momentum formule

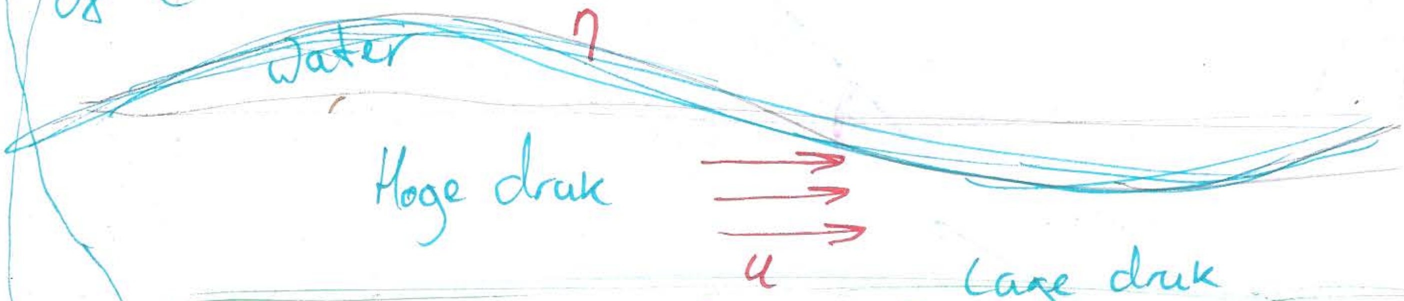
$$\rho\left(\frac{\partial u}{\partial t} + u\frac{\partial u}{\partial x} + v\frac{\partial u}{\partial y} + w\frac{\partial u}{\partial z} - fv\right) = -\frac{\partial p}{\partial x} + r_x$$

Snelheden bijna onafhankelijk van Z

Hydrostatisch balans: $p = \rho g(\eta - z)$

$$\frac{\partial}{\partial y}\left\{\frac{\partial u}{\partial t} + u\frac{\partial u}{\partial x} + v\frac{\partial u}{\partial y} - fv = -g\frac{\partial \eta}{\partial x} + R_x\right.$$

$$\frac{\partial}{\partial x}\left\{\frac{\partial v}{\partial t} + u\frac{\partial v}{\partial x} + v\frac{\partial v}{\partial y} + fu = -g\frac{\partial \eta}{\partial y} + R_y\right.$$



$$\boxed{\begin{aligned}&\frac{\partial^2 u}{\partial t\,\partial y} + \frac{\partial u}{\partial y}\frac{\partial u}{\partial x} + u\frac{\partial^2 u}{\partial x\,\partial y} + \frac{\partial v}{\partial y}\frac{\partial u}{\partial y} + v\frac{\partial^2 u}{\partial y^2} - f\frac{\partial v}{\partial y} - \beta v\\ &\frac{\partial^2 v}{\partial t\,\partial x} + \frac{\partial u}{\partial x}\frac{\partial v}{\partial x} + u\frac{\partial^2 u}{\partial x^2} + \frac{\partial v}{\partial x}\frac{\partial v}{\partial y} + v\frac{\partial^2 v}{\partial x\,\partial y} + f\frac{\partial u}{\partial x}\end{aligned}}$$

$$\boxed{\frac{\partial \zeta}{\partial t} + \zeta\frac{\partial u}{\partial x} + u\frac{\partial \zeta}{\partial x} + \frac{\partial v}{\partial y}\zeta + v\frac{\partial \zeta}{\partial y} + f\left(\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y}\right) +}$$

$$\zeta = \frac{\partial v}{\partial x} - \frac{\partial u}{\partial y}$$

$$\boxed{\frac{\partial \zeta}{\partial t}} + \boxed{u\frac{\partial \zeta}{\partial x} + v\frac{\partial \zeta}{\partial y}} + (\zeta + f)\boxed{\left(\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y}\right)} + \boxed{\beta v} = \boxed{\frac{\partial R_y}{\partial x} - \frac{\partial R_x}{\partial y}}$$

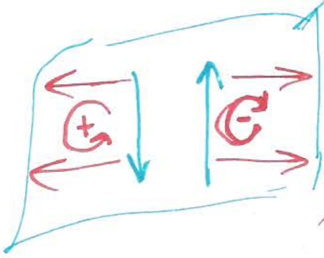
Vorticiteit formule

Lokaal differentiaal

Totaal Materie

Strekken

Beta effect



Weerstand koppel

$$\frac{\partial \frac{1}{\rho}(\tau_y^w - \tau_y^b)}{\partial x} - \frac{\partial \frac{1}{\rho}(\tau_x^w - \tau_x^b)}{\partial y}$$

$$= \cancel{-g\frac{\partial^2 \eta}{\partial x \partial y}} + \frac{\partial R_x}{\partial y}$$

$$= \cancel{-g\frac{\partial^2 \eta}{\partial y \partial y}} + \frac{\partial R_y}{\partial x}$$

$$\boxed{\beta v = \frac{\partial R_y}{\partial x} - \frac{\partial R_x}{\partial y}}$$

Oncompresbaar Stof

Continuiteit formule: $\frac{\partial u}{\partial x}+\frac{\partial v}{\partial y}+\frac{\partial w}{\partial z}=0$

° Irrotationeel

als $\boxed{\nabla\times\vec{V}=0}$ dan $\boxed{\vec{V}=\nabla\phi_v}$

$\boxed{\nabla\cdot\nabla\phi_v=0}$

$\boxed{\nabla^2\phi=0}$

Wanneer is "$\vec{\omega}=0$"?

$$\rho\frac{\partial\vec{v}}{\partial t}+\boxed{\rho\vec{v}\cdot\nabla\vec{u}}=\boxed{-\nabla p}+\boxed{\xi\nabla^2\vec{u}}$$

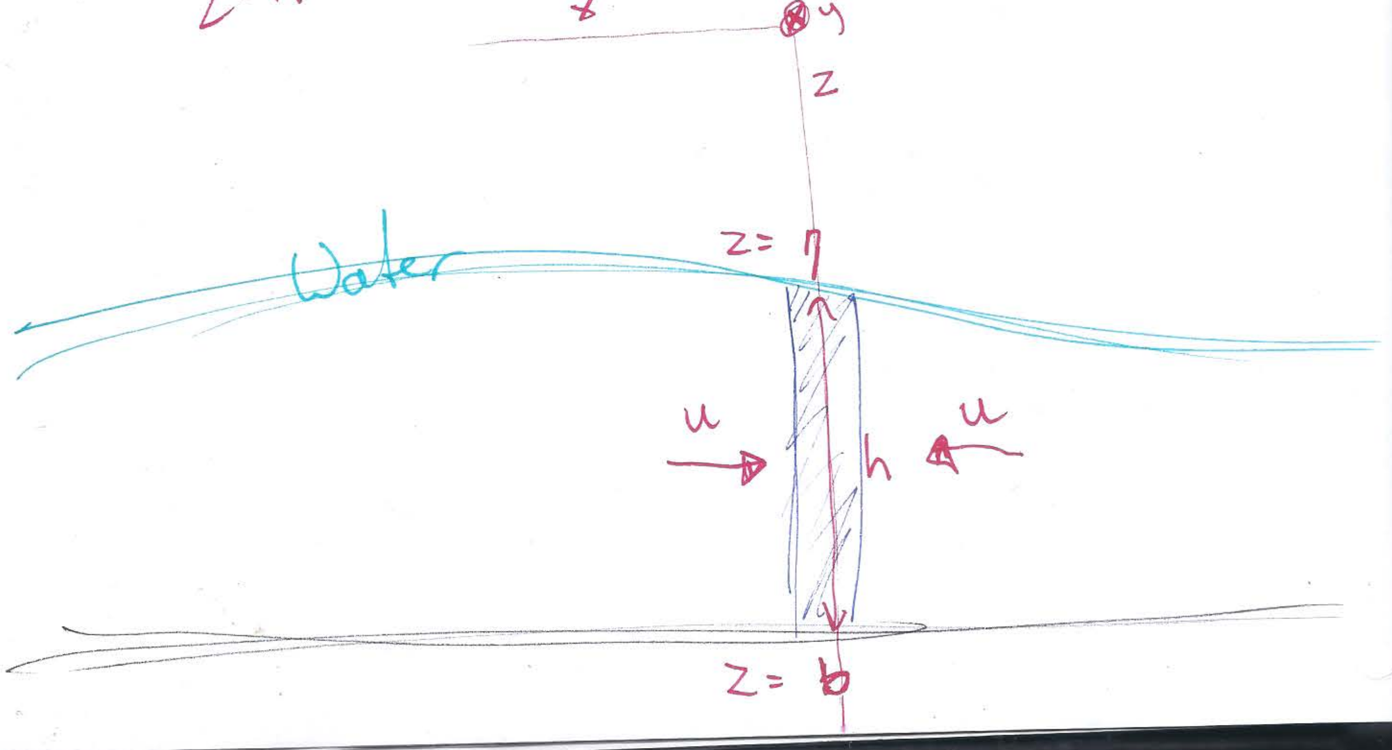
$\nabla\times\nabla^2\vec{u}=\nabla^2(\nabla\times$

$$\rho\frac{\partial\vec{\omega}}{\partial t}$$

$$\rho\frac{\partial\vec{\omega}}{\partial t}+\rho\vec{v}\cdot\nabla\vec{\omega}+\boxed{\vec{\omega}\cdot\nabla\vec{v}}=\xi\nabla^2\vec{\omega}$$

Vortex strekken

° integreer van diepte $z=\eta$ tot $z=b$



94

Momentum als je wat weet van de druk

- diffusie van viscosity

→ diffusie van

als je op $T=0$ geen vorticiteit hebt zal die ook niet komen

$$0 = h\left(\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y}\right) + \omega_{z_N} - \omega_{z_b} = h\left(\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y}\right) + \frac{D\eta}{dt} - \frac{D_b}{dt}$$

Conclusie

$$\boxed{\frac{Dh}{dt} + h\left(\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y}\right) = 0}$$

Potentiële Vorticiteit formule

gebruik de diepte geïntegreerde continuïteit formule

$$\frac{\partial u}{\partial x}+\frac{\partial v}{\partial y} = -\frac{1}{h}\frac{Dh}{dt}$$

om convergence te elimineren in de Vortex formule

$$\frac{\partial \zeta}{\partial t}+u\frac{\partial \zeta}{\partial x}+v\frac{\partial \zeta}{\partial y}+(\zeta+f)\left[\frac{\partial u}{\partial x}+\frac{\partial v}{\partial y}\right]+\beta v=\frac{\partial R_y}{\partial x}-\frac{\partial R_x}{\partial y}$$

$$\frac{D\zeta}{dt}-\frac{\zeta+f}{h}\frac{Dh}{dt}+\frac{Df}{dt}=\frac{\partial R_y}{\partial x}-\frac{\partial R_x}{\partial y}$$

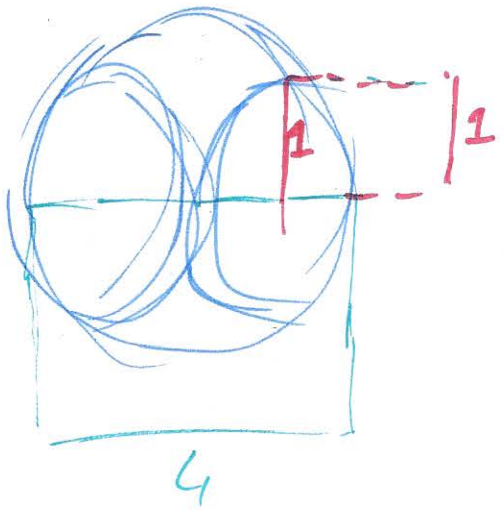
delen door H $\frac{1}{h}\frac{D\zeta+f}{dt}-\frac{\zeta+f}{h^2}\frac{Dh}{dt}=\frac{1}{h}\left(\frac{\partial R_y}{\partial x}-\frac{\partial R_x}{\partial y}\right)$

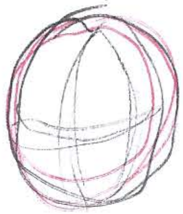
$$\boxed{\frac{D}{dt}\left(\frac{\zeta+f}{h}\right)=\frac{1}{h}\left(\frac{\partial R_y}{\partial x}-\frac{\partial R_x}{\partial y}\right)}$$

Zonder frictie blijft de Potentiële Vorticiteit behouden

De Bartini

$$B = \frac{D}{R} = \frac{1}{4} e^{6,999690} = 274,074996$$



A  $A \equiv A \qquad A \frac{1}{A} = 1$

$$X_i' = \sum_{K=1}^{N+1} A_{ik} X_K \qquad a_{ik} = \text{Real Numbers}$$

$$\sum_K a'_{ik} a_{Lk} = \sum_K \dot{a}_{ki} \, a_{KL}$$

Vorticiteit: $\omega = \nabla \times V$ Kromming van Snelheid

Circulatie $C = \oint V \cdot \partial L$ integraal van snelheid rond gesloten Loop

$$C = \oint \omega \cdot \partial S$$

$$n \cdot \nabla \times V = \frac{1}{\delta S} \oint V \cdot \partial L$$

opp

Vast Lichaam Vortex

Snelheid is Hoeksnelheid · Straal

$\cancel{U_z \,\&\, U_r = 0}$ $U = \Omega r$

$$\omega = \nabla \times V = \omega_z \cdot K$$

$$\omega_z = \frac{1}{r}\frac{\partial}{\partial r}(r U_\phi) = \frac{1}{r}\frac{\partial}{\partial r}(r^2 \Omega) = 2\Omega$$

Irrotationeel

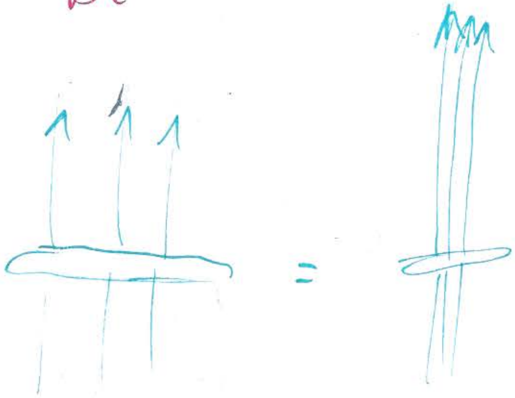
$U_\phi = \frac{K}{r}$ K is constant over de kracht van de Vortex

$$\omega_z = \frac{1 \partial}{r \partial r}(r U_\phi) = \frac{\partial}{\partial r^2}\left(r \frac{K}{r}\right)$$

Vorticiteit in een draaiend referentiekader

$$\frac{D\omega_r}{Dt} = \left[\omega_r + 2\Omega\cdot\nabla\right]v - (\omega + 2\Omega)\nabla\cdot v + \frac{1}{\rho^2}(\nabla\rho\times\nabla p)$$

$$\frac{D\left(\frac{\omega_r}{\rho}\right)}{Dt} = \left(\frac{1}{\rho}(\omega_r + 2\Omega)\cdot\nabla\right)v + \frac{1}{\rho^3}(\nabla\rho\times\nabla p)$$



uitrekken van veldlijnen
zorgt voor vorticiteit versterking
maar gaat ten kosten van oppervlakte

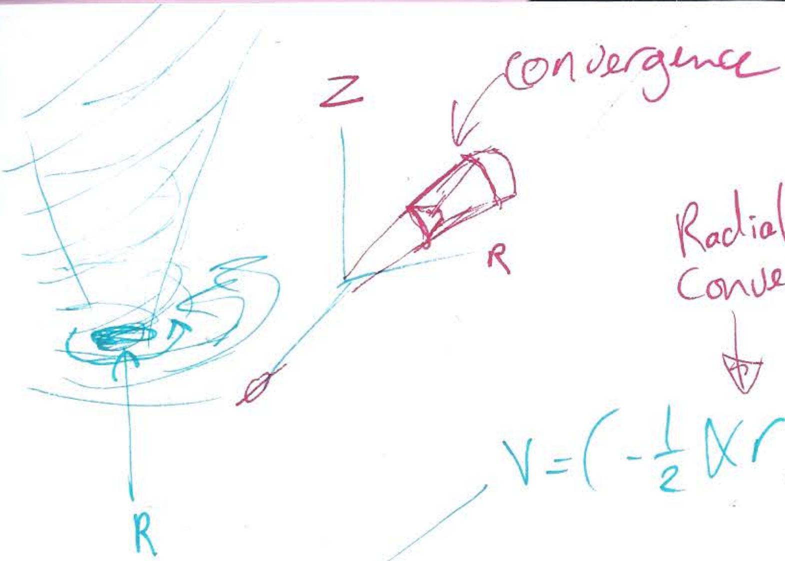
$$\boxed{\frac{D\zeta}{Dt} = \zeta\frac{\partial u_z}{\partial z} + \nu\nabla^2\zeta}$$

$$\frac{\partial\zeta}{\partial t} + \frac{u_\phi}{r}\frac{\partial\zeta}{\partial\phi} + \frac{\partial\zeta}{\partial r} + \frac{\partial\zeta}{\partial z} = \zeta\frac{\partial u_z}{\partial z} + \nu\nabla^2\zeta$$

$$-\frac{1}{2}\alpha r\frac{\partial\zeta}{\partial r} = \zeta\alpha + \nu\frac{1}{r}\frac{\partial}{\partial r}\left(r\frac{\partial\zeta}{\partial r}\right)$$

$$\zeta = \zeta_0 \,\mathrm{Exp}\left[-\frac{\alpha r^2}{4\nu}\right]$$

$$r_0 = 2\left(\frac{\nu}{\alpha}\right)^{\frac{1}{2}}$$



Radiale Convergence

opwoordse bewegng

$$V=\left(-\frac{1}{2}\alpha r,\ u_\phi,\ \alpha z\right)$$

Swirl

Massabehoud

$$\nabla\cdot V=\frac{1}{r}\frac{\partial V_\phi}{\partial \phi}+\frac{\partial V_z}{\partial z}+\frac{1}{r}\frac{\partial (u_r r)}{\partial r}$$

$$=0+\alpha-\frac{1}{2r}\frac{\partial}{r}(\alpha r^2)=0$$

$$\omega_\phi=\left(\frac{\partial u_r}{\partial z}-\frac{\partial u_z}{\partial r}\right)=0$$

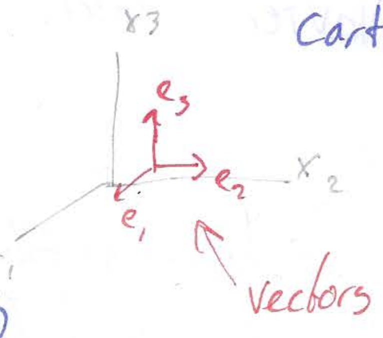
$$\omega_r=\left(\frac{\partial u_z}{\partial \phi r}-\frac{\partial u_\phi}{\partial z}\right)=0$$

$$\omega_z=\left(\frac{\partial (r u_\phi)}{r\partial r}-\frac{\partial u_r}{\partial \phi}\right)=\xi r$$

missie:
de soort van u_ϕ vinde die balans brengt

Vector Calculus

Cartesian Coordinaten



velocity vector $\underline{u} = \sum_{i=1}^{3} U_i e_i$

Stress tensor $\underline{\underline{T}} = \sum_{i=1}^{3}\sum_{j=1}^{3} T_{ij}\, e_i e_j$

↑ kracht Normaal

$$A \cdot B = a_1 B_1 + A_2 B_2 + A_3 B_3 = \sum_{i=1}^{3} A_i B_i$$

$$A \cdot B = A_i B_j \delta_{ij}$$

$\underline{u} = U_i$

$\underline{\underline{T}} = T_{ij}$

$\delta_{ij} = 1$ als $i = j$
$= 0$ als $i \neq j$

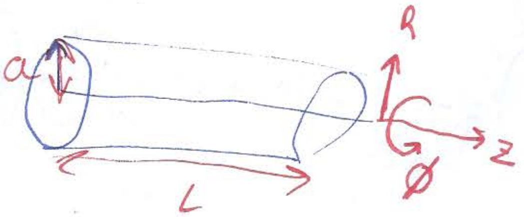
$$A \times B = e_{ijk} A_j B_k$$

gebruik de Navier Stokes Equations

1. Kies een Coördinaten sÿsteem
   A) Welke Kant gaat het op
   B) Welke richting veranderd de snelheid
2. Wat is de kracht voor beweging (Druk, relativiteit, Zwaartekracht)
3. De grens toestand
4. gok de oplossing met Intuitie
5. Versimpel de Energiebehoud formules
6. Los de formules op met de overige differtiatres

1) Stabiele Liniaire flow door een cilinder met radius a

Vind: Snelheid verdeling



gebruik cilinder coordinaten

Snelheid is in z } $\boxed{V_z(R)}$

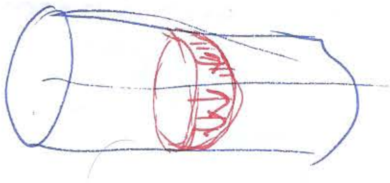
Snelheid varieert in R } $\boxed{V_R = V_\phi = 0}$

2) druk gedreven flow

3) grens toestand @ $R = A$, $V_z = 0$

@ $R = 0$, $V_z =$ Bepaald

4)



5) Versimpel Energie Behoud formule (continuity)

$$\cancel{\frac{\partial \rho}{\partial t}} + \frac{1}{R}\frac{\partial}{\partial r}(\cancel{\rho \overset{0}{V_r}}) + \frac{1}{R}\frac{\partial}{\partial \phi}(\cancel{\rho \overset{0}{V_\phi}}) + \frac{\partial}{\partial z}(\cancel{\rho V_z}) = 0$$

Stabiel

formules van energie Behoud in een Cilinder

$$\boxed{R}\ \rho\left(\cancel{\frac{\partial v_r}{\partial t}} + \cancel{v_r\frac{\partial v_r}{\partial r}} + \cancel{\frac{v_\phi}{r}\frac{\partial v_r}{\partial \phi}} - \cancel{\frac{v_\phi^2}{r}} + \cancel{v_z\frac{\partial v_z}{\partial z}}\right) = -\frac{\partial p}{\partial r} - \cancel{\rho g_r} + \cancel{\mu\left(\frac{\partial}{\partial r}\left[\frac{1}{r}\frac{\partial}{\partial r}(r v_r)\right]\right.}$$

$$\boxed{\phi}\ \rho\left(\cancel{\frac{\partial v_\phi}{\partial t}} + \cancel{v_r\frac{\partial v_\phi}{\partial r}} + \cancel{\frac{v_\phi}{r}\frac{\partial v_\phi}{\partial \phi}} + \cancel{\frac{v_r v_\phi}{r}} + \cancel{v_z\frac{\partial v_\phi}{\partial z}}\right) = -\frac{1}{r}\frac{\partial p}{\partial \phi} + \cancel{\rho g_\phi} + \cancel{\mu\left(\frac{\partial}{\partial r}\left(\frac{1}{r}\frac{\partial}{\partial r}(r v_\phi)\right)\right.}$$

$$\boxed{Z}\ \rho\left(\cancel{\frac{\partial v_z}{\partial t}} + \cancel{v_r\frac{\partial v_z}{\partial r}} + \cancel{\frac{v_\phi}{r}\frac{\partial v_z}{\partial \phi}} + \cancel{v_z\frac{\partial v_z}{\partial z}}\right) = -\frac{\partial p}{\partial z} + \cancel{\rho g_z} + \mu\left(\frac{1}{r}\frac{\partial}{\partial r}\left(r\frac{\partial v_z}{\partial r}\right)\right.$$

Maak nu de oplossing door alles wat nul is weg te halen

$\boxed{R}\ \frac{\partial p}{\partial r} = 0$ dus $p \neq f(r)$ $\quad$ $\boxed{\phi}\ \frac{\partial p}{\partial \phi} = 0$ dus $p \neq f(\phi)$

$$\boxed{Z}\ \underbrace{\frac{\partial p}{\partial z}}_{f(z)} = \underbrace{\frac{\mu}{r}\frac{\partial}{\partial r}\left(r\frac{\partial v_z}{\partial r}\right)}_{f(r)}$$

grenstoestand: ① $r = a$ $V_z = 0$

② $r = 0$ V_z = bepaald

als de vergelijking is gescheiden moet er een constante bij

$$\frac{\partial p}{\partial z} = \frac{\mu}{r}\frac{\partial}{\partial r}\left(r\frac{\partial v_z}{\partial r}\right)$$

$\frac{\partial p}{\partial z}$ = constant $P(z)$ = liniair

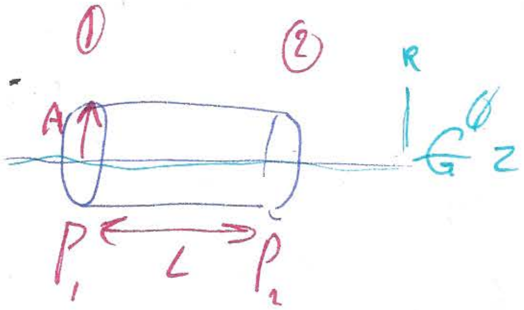
$$\frac{\partial p}{\partial z} = \frac{P_2 - P_1}{z_2 - z_1} = \frac{P_2 - P_1}{L} = \frac{\Delta P}{L}$$

$V_z(r) \quad V_r = V_\phi = 0$

$$+\frac{1}{r^2}\cancel{\frac{\partial^2 V_r}{\partial \phi^2}} - \frac{2}{r^2}\cancel{\frac{\partial V_\phi}{\partial \phi}} + \cancel{\frac{\partial^2 V_r}{\partial z^2}}\Big)$$

$$+\frac{1}{r^2}\cancel{\frac{\partial^2 V_\phi}{\partial \phi^2}} + \cancel{\frac{2}{r^2}\frac{\partial V_r}{\partial \phi}} + \cancel{\frac{\partial^2 V_\phi}{\partial z^2}}\Big)$$

$$+\frac{1}{r^2}\cancel{\frac{\partial^2 V_z}{\partial \phi^2}} + \cancel{\frac{\partial^2 V_z}{\partial z^2}}\Big)$$



$$\int \frac{\partial}{\partial r}\left(r\frac{\partial V_z}{\partial r}\right) = -\int \frac{r}{m}\frac{\Delta P}{L}$$

$$r\frac{\partial V_z}{\partial r} = -\frac{r^2}{2m}\frac{\Delta P}{L} + C_1$$

$$\int \frac{\partial V_z}{\partial r} = \int -\frac{r}{2m}\frac{\Delta P}{L} + \frac{C_1}{r}$$

$$\boxed{V_z = -\frac{r^2}{4m}\frac{\Delta P}{L} + \cancel{C_1 \log(r)}^{\,0} + C_2}$$

$$V_z(R) = -\frac{r^2}{4m}\frac{\Delta P}{L} + \frac{a^2}{4m}\frac{\Delta P}{L}$$

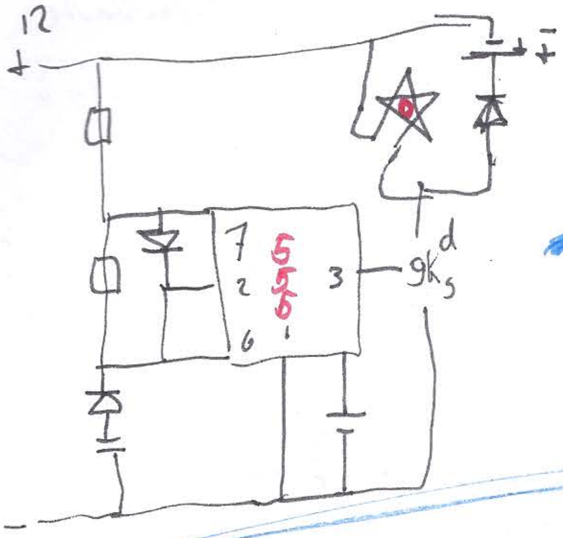
$$\boxed{V_z(R) = \frac{a^2}{4m}\frac{\Delta P}{L}\left(1 - \frac{R^2}{a^2}\right)}$$

① @ $r = a \quad V_z = 0$

$$\boxed{C_2 = -\frac{a^2}{4m}\frac{\Delta P}{L}} - C_1 \log(a)$$

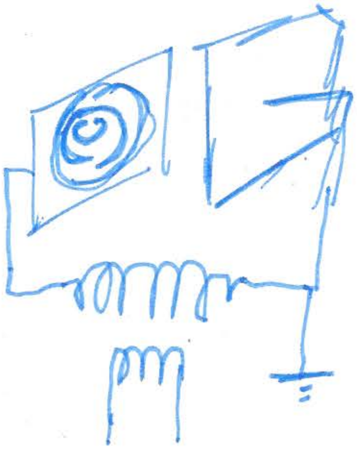
② @ $r = 0 \quad V_z = \cdots \quad \leftarrow = 0$

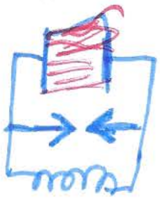
$$V_z = 0 + C_1 \log(a) + C_2$$

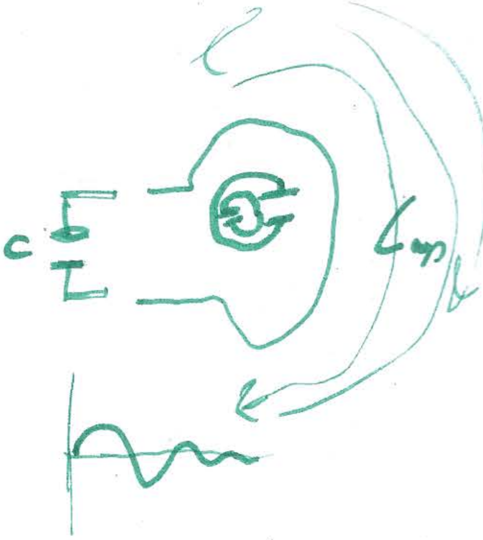


Palsen Generator

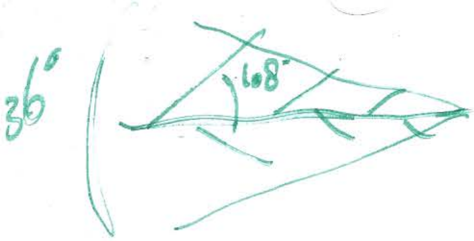
$I = \frac{\Psi}{t}$

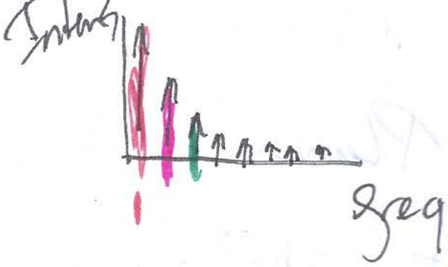






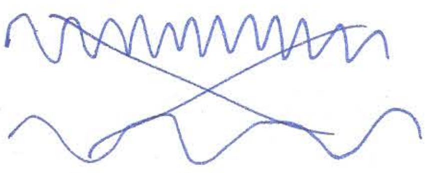
Harmonische Osctafre



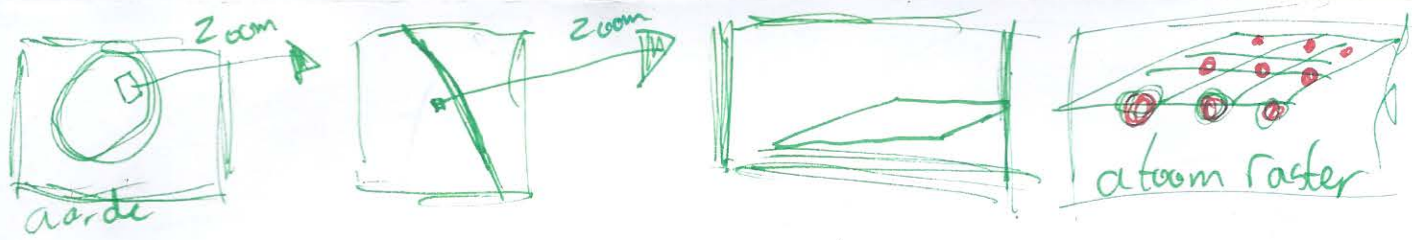


Tuning tussen antenes met 1 Signaal Constant

meng met deze frequentie je Signaal



Deetizzle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zoom
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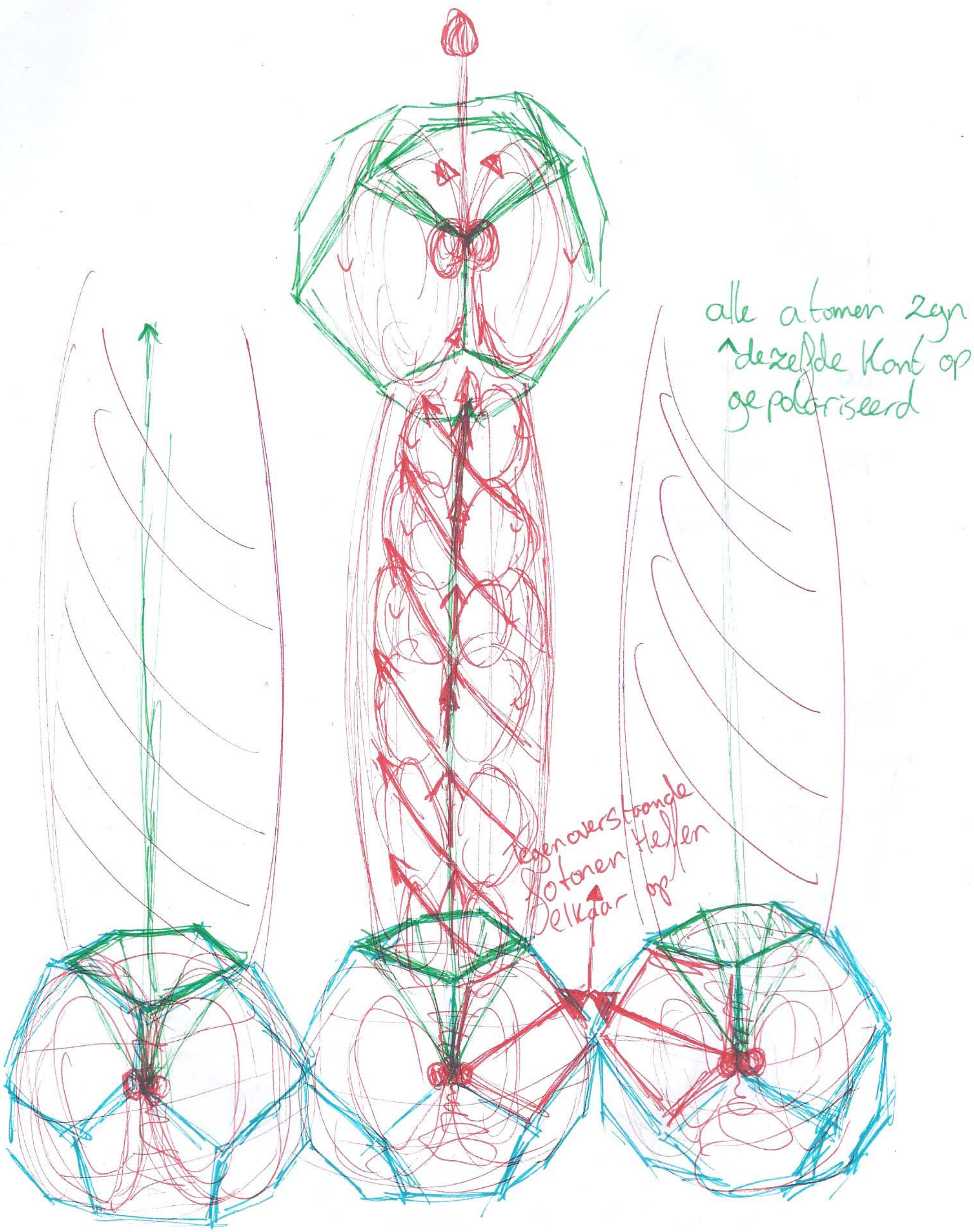
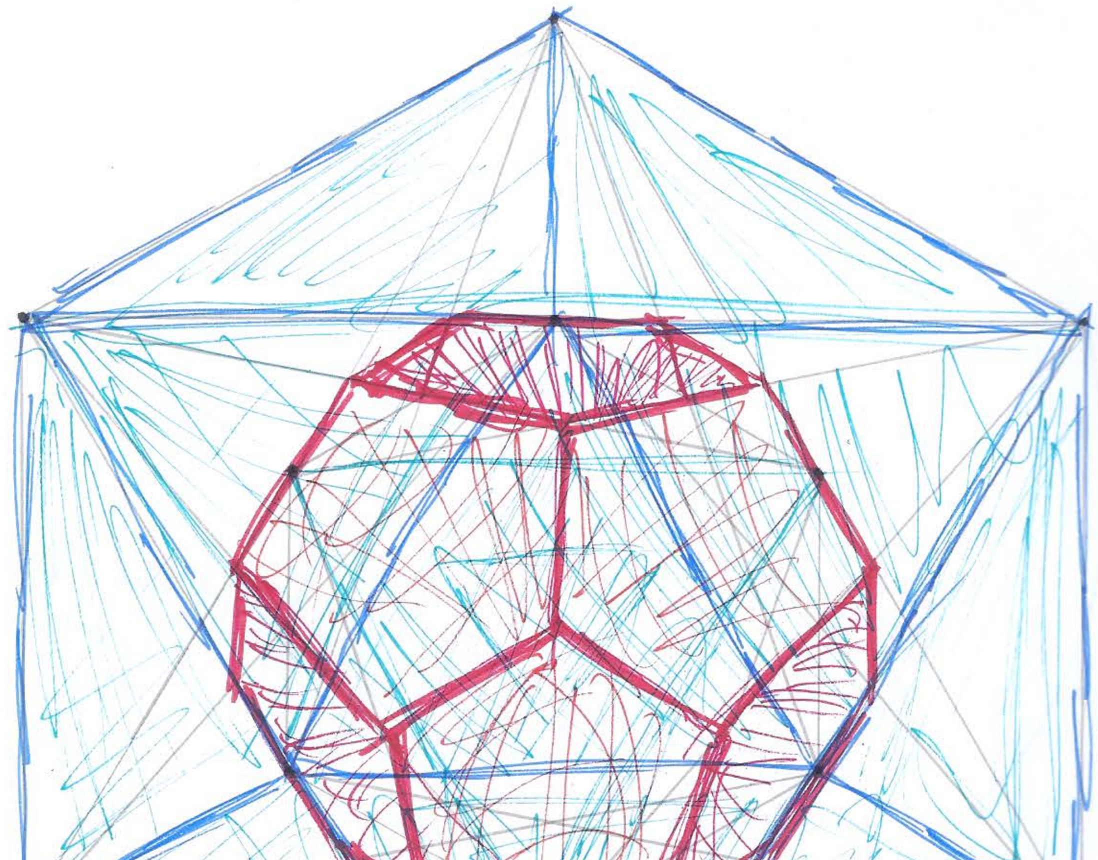
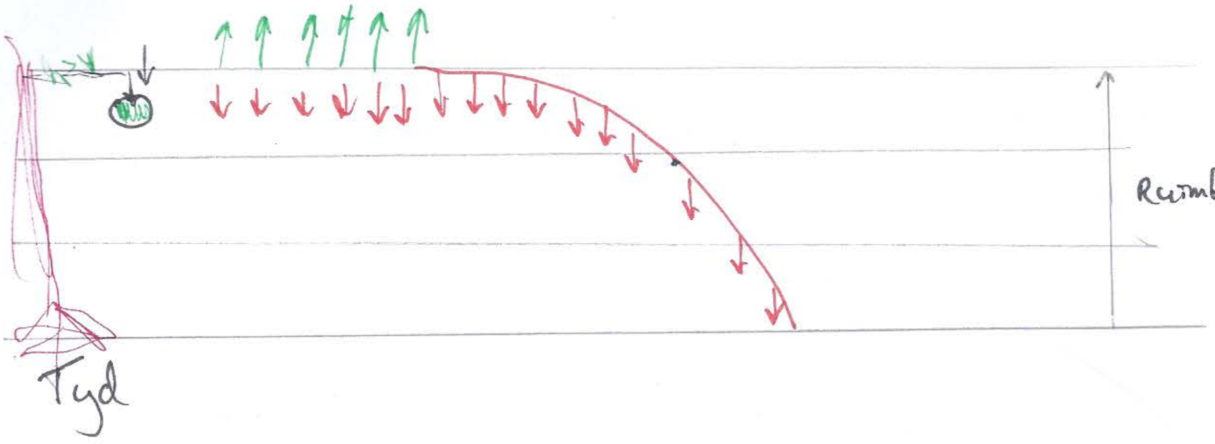
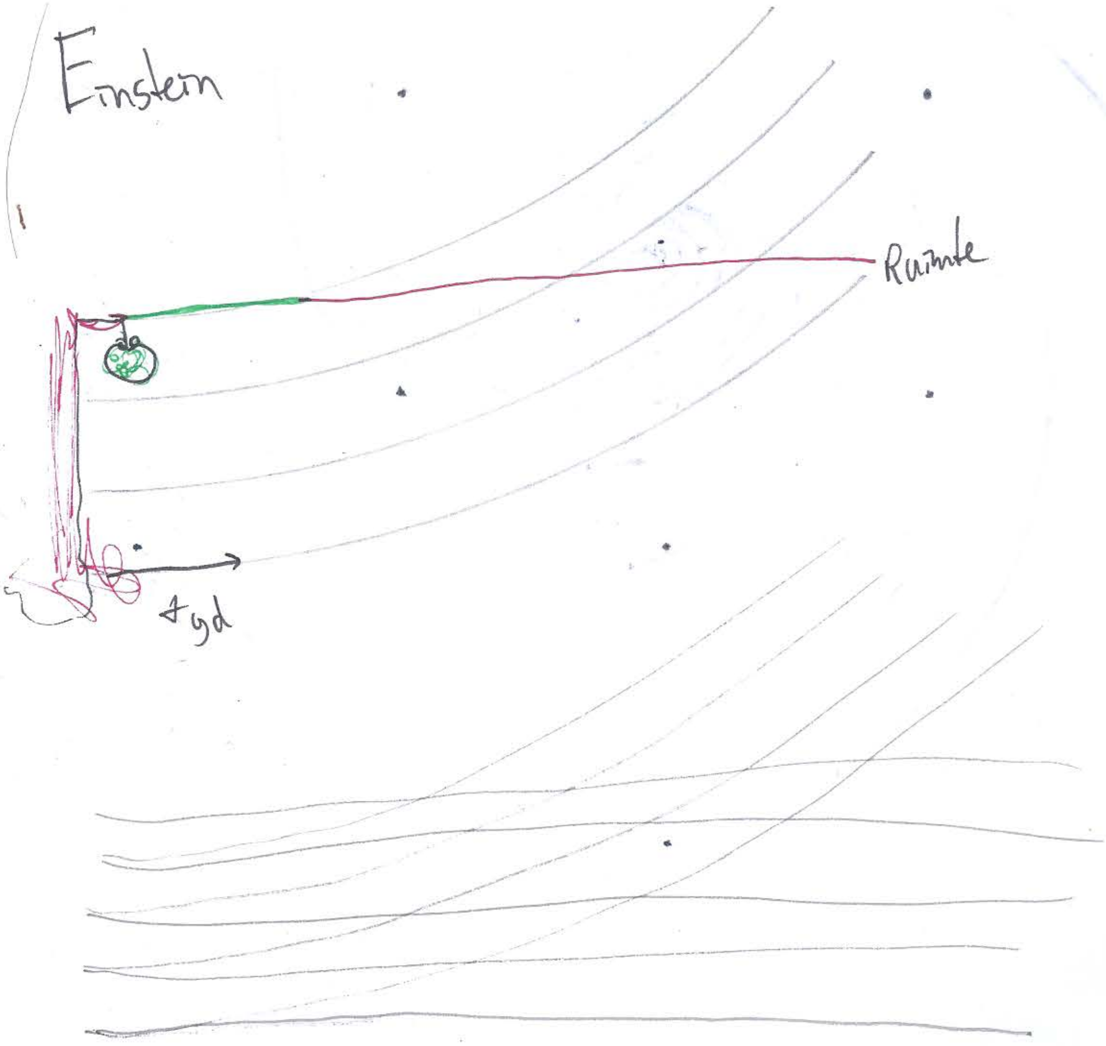

alle atomen zijn dezelfde kant op gepolariseerd
Tegenoverstaande fotonen Heffen elkaar op

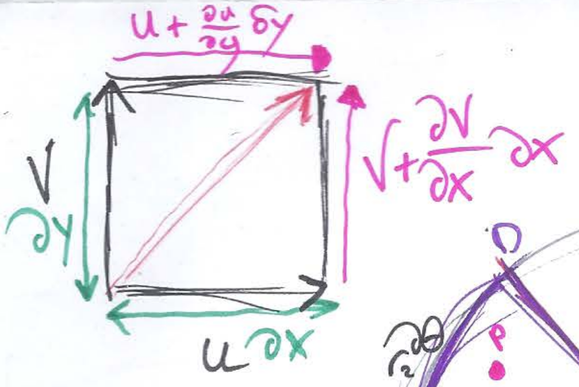


Newton

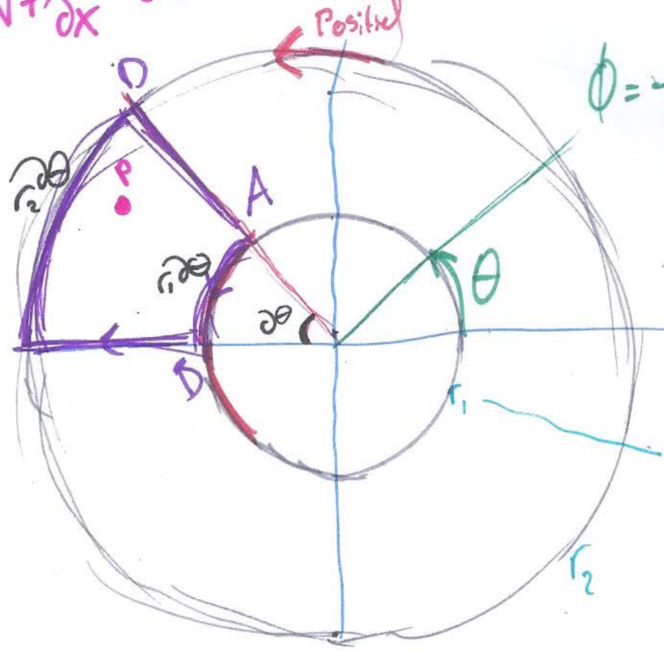


Einstein





$$\phi = \frac{\Gamma}{2\pi} \cdot \frac{\pi}{2}$$



$$\phi = \frac{\Gamma}{2\pi} \cdot \theta$$

$$\phi = 0$$

$$\psi = -\frac{\Gamma}{2\pi} \ln R_1$$

$$\psi = -\frac{\Gamma}{2\pi} \ln R_2$$

Velocity Components

$$V_\theta = \frac{\text{circulation Const}}{r} \quad \& \quad V_\theta = \frac{(\Gamma/2\pi)}{r}$$

$$V_R = 0$$

$$\psi = -\frac{\Gamma}{2\pi} \ln r$$

$$\phi = \frac{\Gamma}{2\pi} \theta$$

Stream Function

$$V_\theta = -\frac{\partial \psi}{\partial r} \qquad V_R = -\frac{1}{r}\frac{\partial \psi}{\partial \theta}$$

$$\psi = -\frac{\Gamma}{2\pi} \ln r + C_1$$

Velocity Potential

$$\hat{r} V_r + \hat{\theta} V_\theta = \hat{r}\frac{\partial \phi}{\partial r} + \hat{\theta}\frac{1}{r}\frac{\partial \phi}{\partial \theta}$$

$$\phi = \frac{\Gamma}{2\pi}\theta + C_2$$

Circulatie is gedefinieerd

3D $\Gamma = \int \vec{V} \cdot \vec{\partial s} = \int (u\partial x + v\partial y + w\partial z)$

2D $\Gamma = \int (u\partial x + v\partial y)$ of $\Gamma = \int V \cos\alpha \, \partial s$

circulatie in een vloeiende beweging

$$\partial\Gamma = u\partial x + \left(v + \frac{\partial v}{\partial x}\partial x\right)\partial y - \left(u + \frac{\partial u}{\partial y}\partial y\right)\partial x - v\partial y$$

$$\partial\Gamma = \partial x \partial y \left[\frac{\partial v}{\partial x} - \frac{\partial u}{\partial y}\right]$$

$$\partial\Gamma = \partial x \partial y \, (2\omega_z)$$

$$\partial A = \partial x \partial y$$

$$\frac{\partial\Gamma}{\partial A} = 2\omega_z = \Omega_z$$

Circulatie per oppervlakte is de vorticiteit van de stroming

Vrije vortex

$$V_\theta = \frac{\frac{\Gamma}{2\pi}}{r} = \frac{C}{r}$$

dus... $\Gamma = \int_0^{2\pi} v r \, \partial\theta$

$$= \int_0^{2\pi} \frac{C}{r} r \, \partial\theta$$

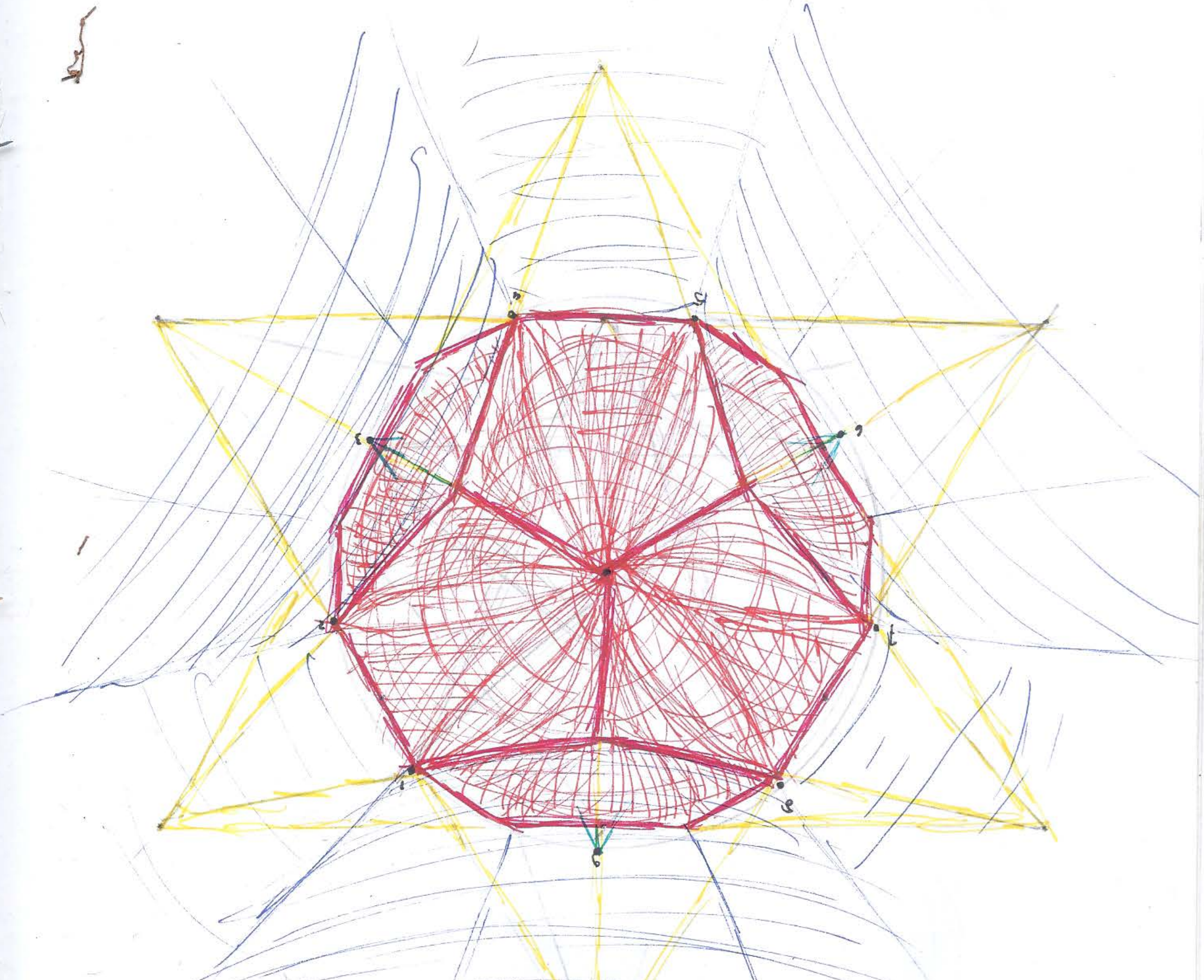
$$= 2\pi C$$

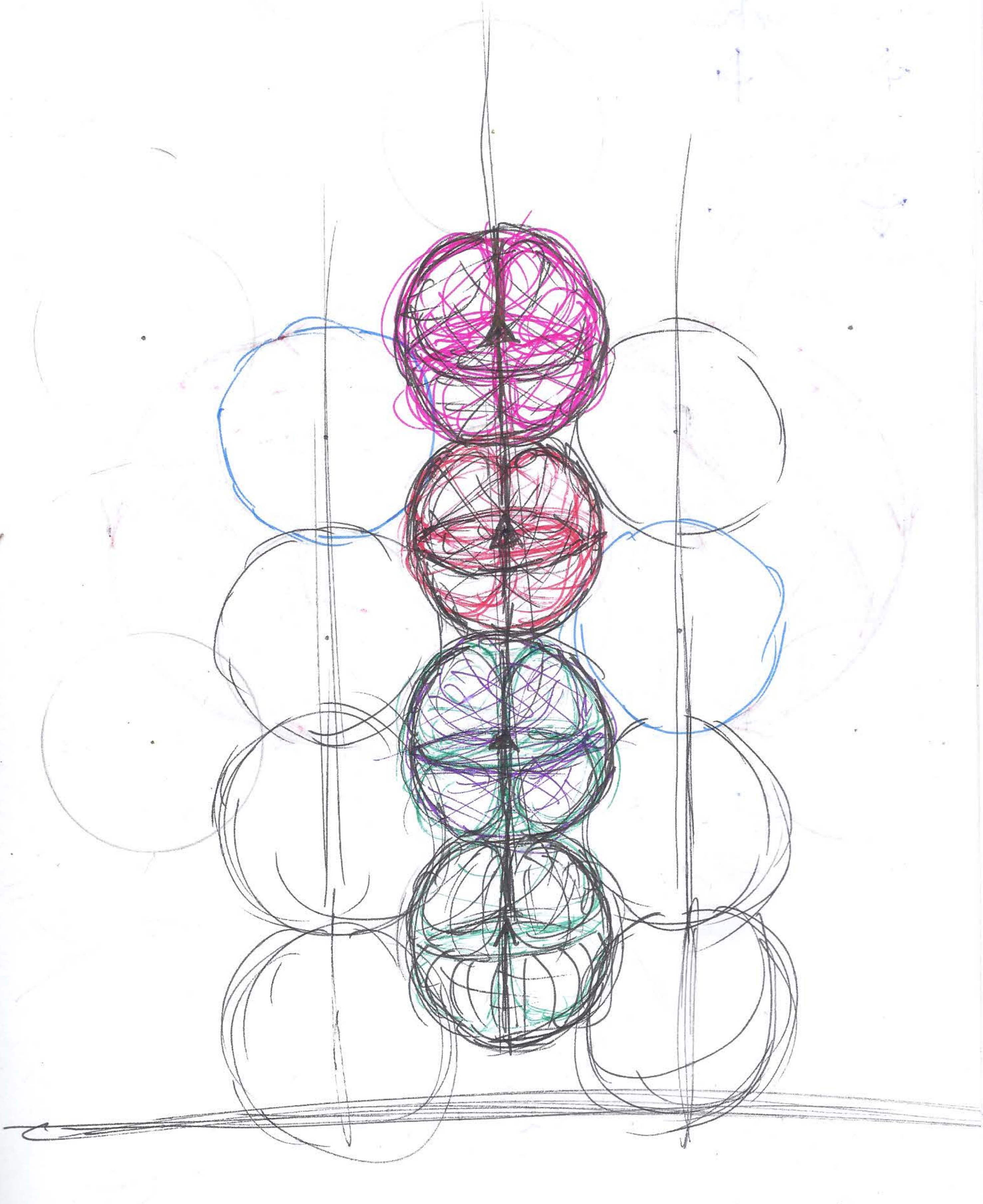
circulaire pad

$$V_\theta = \frac{\frac{\Gamma}{2\pi}}{r} = \frac{C}{r}$$

$$\Gamma_{Abcd} = \Gamma_{Ab} + \Gamma_{bc} + \Gamma_{cd} + \Gamma_{dA}$$

$$-\frac{C}{r_1} r_1 \partial\theta + \frac{C}{r_2} r_2 \partial\theta = 0$$





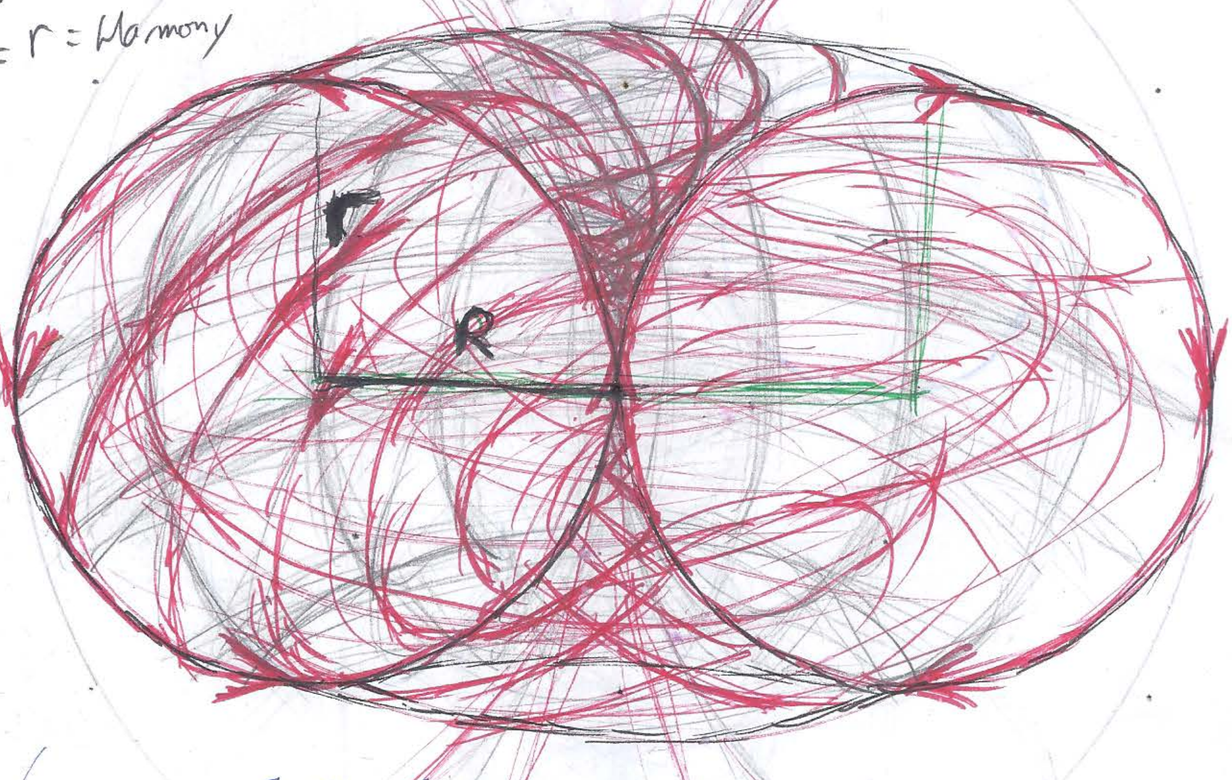
Quarck

Up Left Up Right

Down Left Down Right

$R \geqslant r = \text{chaos}$

$R = r = \text{Harmony}$

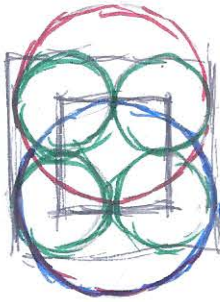


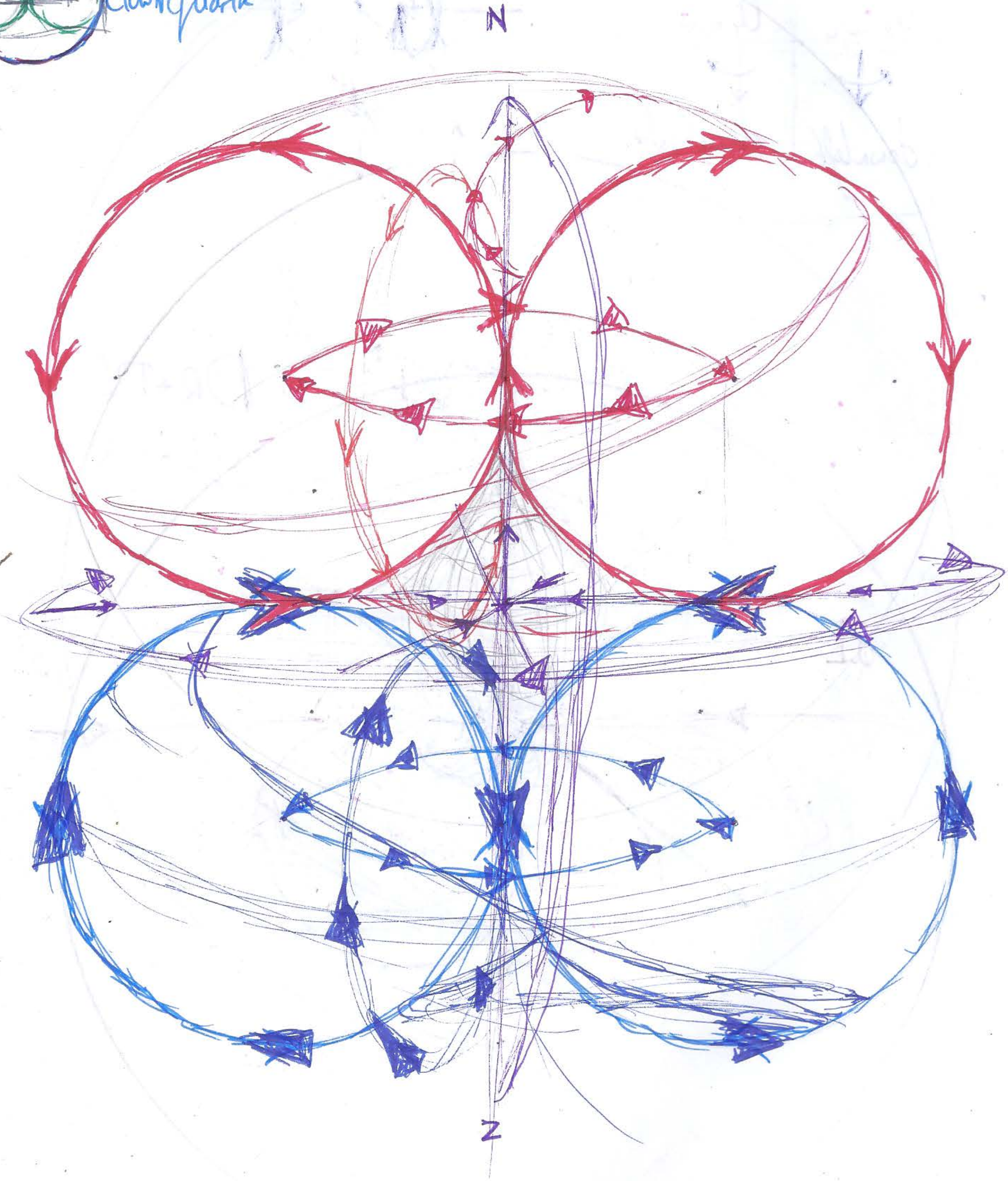
Volume $2\pi^2 R \cdot r^2$

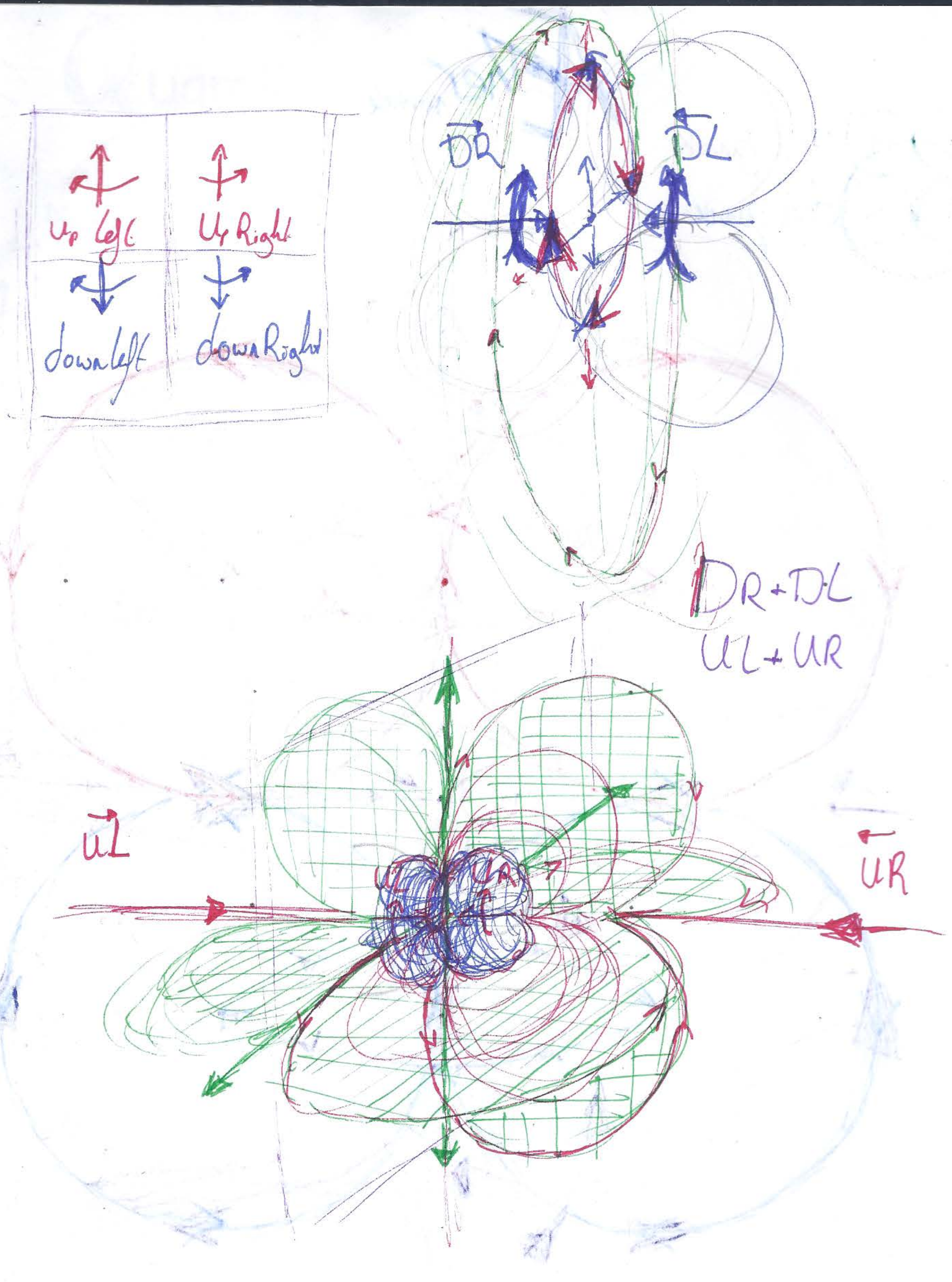
Opp $4\pi^2 r \cdot R$

$$r^2 = \left(\sqrt{x^2+y^2} - R\right)^2 + z^2$$

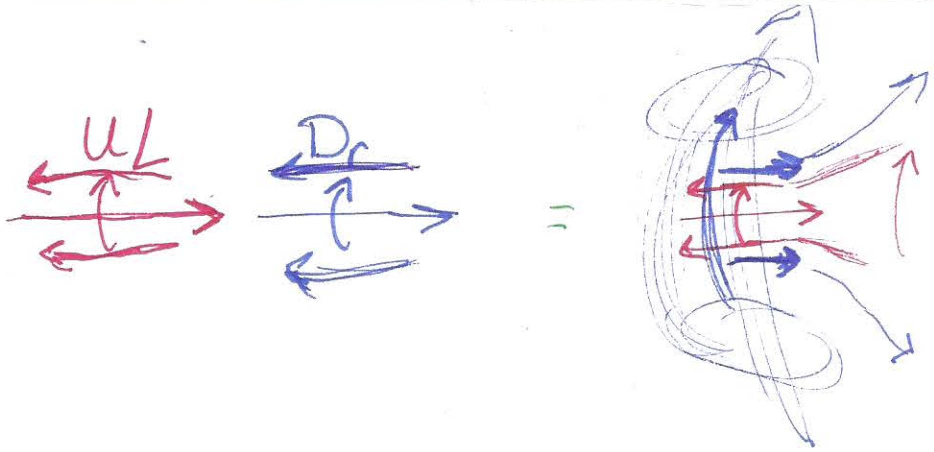
AEther Particle

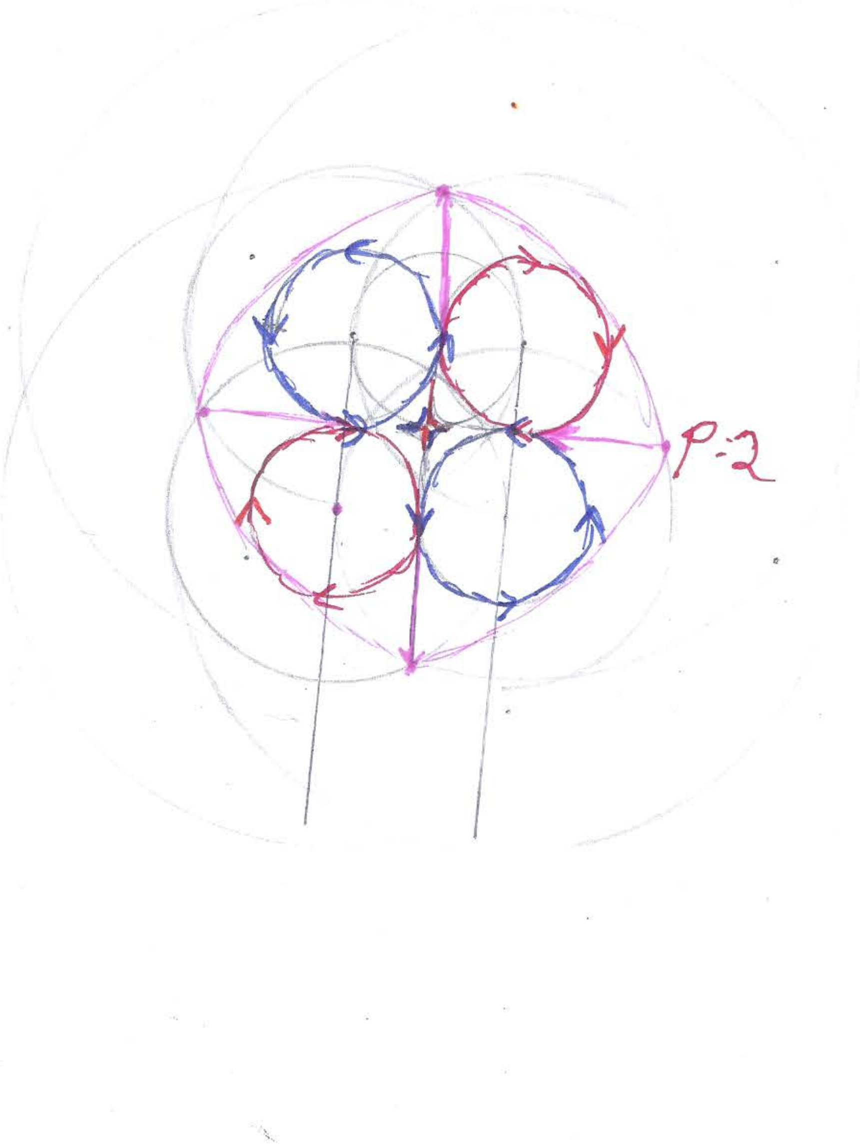




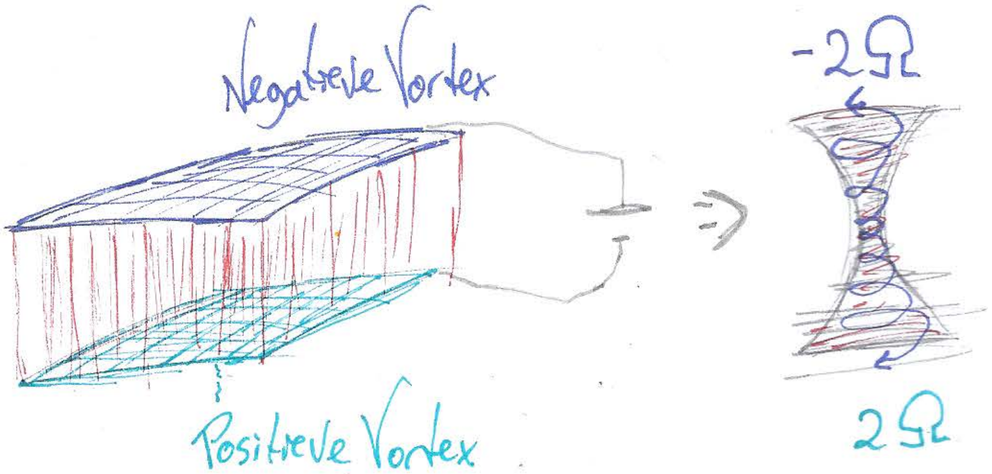


Up Left
Up Right
down left
down Right
DR
DL
DR + DL
UL + UR
UL
UR


UL
Dr
=


P:2

$$e^{i\phi} = \cos(\phi) + i\sin(\phi)$$
$$e^{-i\phi} = \cos(\phi) - i\sin(\phi)$$
$$e^{i\phi} \cdot e^{-i\phi} = 1$$



Mogelijk Voltage

Potentiele Vorticiteit

$$\boxed{\Pi = \frac{\zeta + f}{h}}$$

Vortex: massa van vloeistof in Wervel of Circulaire beweging.

Verenigd Veld theorie

* Coordinaten systeem K heeft dezelfde Wetten als K'
  Generale & Speciale Relativiteit
* Electromagnetisme word gefuceerd met Gravito Electro Magnetism
* Golf-Deeltjes word Golf-Vortex Dualiteit
* Veld theorie word gebasseerd op de Behoudswetten
  - Massa (continuïteitsvergelijking)
  - Impuls
  - Energie

• Stelling van Bernoulli
• circulatiestelling Kelvin
• Wervelstelling Helmholtz

* Curl, Rotatie & Stelling van Stokes
* Golven door de Rotatie vrije Vacuum zijn GEM

Vorticiteit is de kromming van snelheid Vector

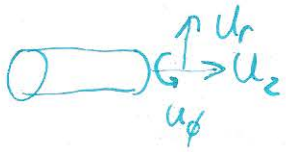
$\omega = \nabla \times V$

Circulatie is integraal van snelheid rond een gesloten kring

$C = \oint V \cdot \partial L$

Stokes formules zeggen ook

$C = \int \omega \cdot \partial S$



Vast Lichaam

$u_\phi = \Omega r$

omwent snelh = Hoeksnelheid · Radius

$\omega = \nabla \times V = \omega_z \cdot K$

$\omega_z = \frac{1}{r}\frac{\partial}{\partial r}(r u_\phi) = \frac{1}{r}\frac{\partial}{\partial r}(r^2 \Omega)$

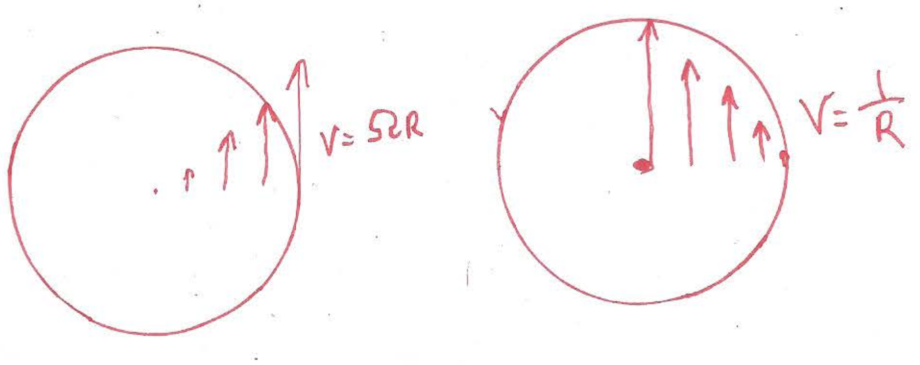
$\omega = 2\Omega \Rightarrow$ Vorticiteit = 2 · Hoeksnelheid

Irrotationele Vortex ---> $V = \frac{1}{R}$

$u_\phi = \frac{K}{r}$ de som van $V \cdot R$ = Constant

K is de Vortex Constante

z vorticiteit: $\omega_z = \frac{1}{r}\frac{\partial}{\partial r}(r u_r) = \frac{1}{r}\frac{\partial}{\partial r}\left(r \frac{K}{r}\right) = 0$



Vorticiteit formule

Momentumformule: $\frac{\partial V}{\partial t} - V \times \omega = -\frac{1}{\rho}\nabla P + \nu \nabla^2 V$

Hiervan de kromming: $\frac{\partial \omega}{\partial t} - \boxed{\nabla \times (V \times \omega)} = \boxed{\frac{1}{\rho^2}(\nabla \rho \times \nabla P)} + \nu \nabla^2 \omega$

$\rightarrow = 0$

dichtheid Constant

of

dichtheid functie van druk

$$\boxed{\nabla \times (V \times \omega) = (\omega \cdot \nabla)V - (V \cdot \nabla)\omega - \omega \nabla \cdot V + V \nabla \cdot \omega}$$

Massa Behoud formule:

$$\frac{D\rho}{Dt} + \rho \nabla \cdot V = 0$$

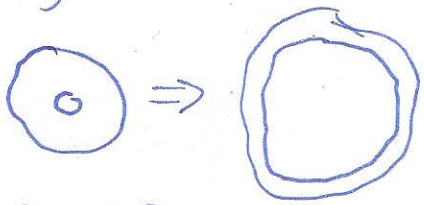
Homentropic fluid = 0

Massa Behoud Krommingformule

$$\frac{D\tilde{\omega}}{Dt} = (\tilde{\omega} \cdot \nabla)V + \boxed{\frac{1}{\rho^3}(\nabla \rho \times \nabla P)}$$

$\tilde{\omega} = \omega / \rho$ $\quad \boxed{\nabla \cdot V = 0}$ – onkompres

als een Vortex van vorm veranderd bijvoorbeeld uitrekken
Blijft de Absolute Vorticiteit gelijk



$$\frac{D\omega_r}{Dt} = [(\omega_r + 2\Omega) \cdot \nabla]V - (\omega + 2\Omega)\nabla \cdot V + \frac{1}{\rho^2}(\nabla \rho \times \nabla P)$$

$\omega_a = \omega_r + 2\Omega$

of

$$\frac{D}{Dt}\left(\frac{\omega_r}{\rho}\right) = \left(\frac{1}{\rho}(\omega_r + 2\Omega) \cdot \nabla\right)V + \frac{1}{\rho^3}(\nabla \rho \times \nabla P)$$

2 Dimentionale Stroming

$$\omega = K\left(\frac{\partial v}{\partial x} - \frac{\partial u}{\partial y}\right)$$

2 Dimentionale Vorticiteit formule

$$\frac{D\zeta}{Dt} = 0 = \frac{\partial \zeta}{\partial t} + u \cdot \nabla \zeta$$

$$u = -\frac{\partial \psi}{\partial x} \quad v = \frac{\partial \psi}{\partial y}$$

Stromingfunctie ψ

$$\zeta = \nabla^2 \psi$$

$$\frac{\partial \zeta}{\partial t} + J(\psi, \nabla^2 \psi) = 0$$

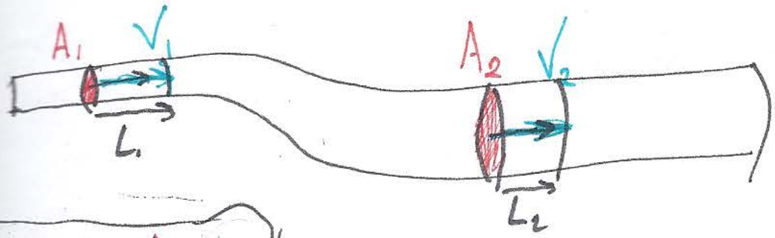
$f = 2\Omega \cdot K$

als f constant is

word de formule

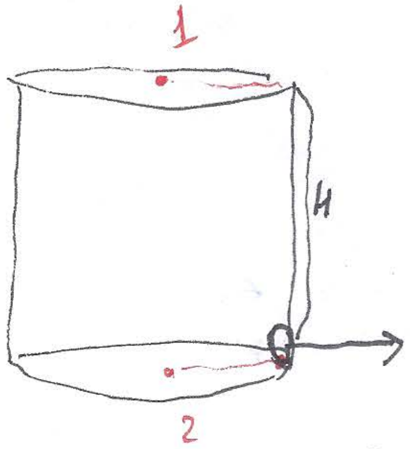
$$\frac{\partial \zeta}{\partial t} + u \cdot \nabla(\zeta + f) = 0$$

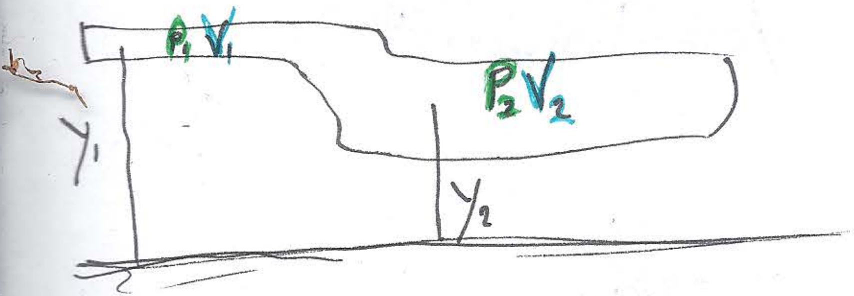
$$\boxed{\frac{\partial}{\partial t}\left[\nabla^2 \psi - F\psi\right] + \left\{\frac{\partial \psi}{\partial x}\frac{\partial \nabla^2 \psi}{\partial y} - \frac{\partial \psi}{\partial y}\frac{\partial \psi \nabla^2 \psi}{\partial x}\right\} + \beta \frac{\partial \psi}{\partial x} = 0}$$



$$A_1V_1 = A_2V_2$$

Continuiteits Wet





$$P_1 + \tfrac{1}{2}\rho V_1^2 + \rho g y_1 = P_2 + \tfrac{1}{2}\rho V_2^2 + \rho g y_2$$

$$P_1 + \frac{1}{2}\rho V_1^2 + \rho g y_1 = \text{Constant}$$

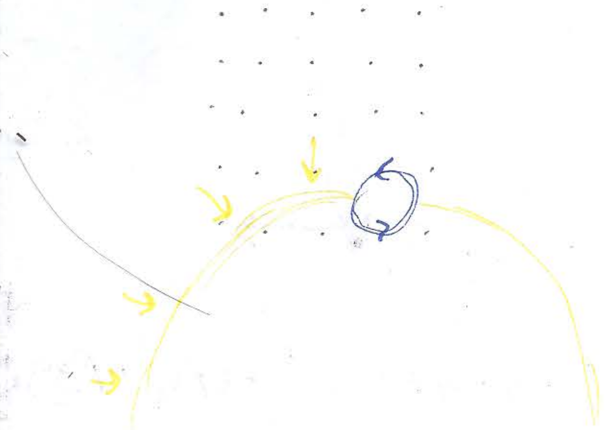
Bernoulli formule

drukEnergy dichtheid

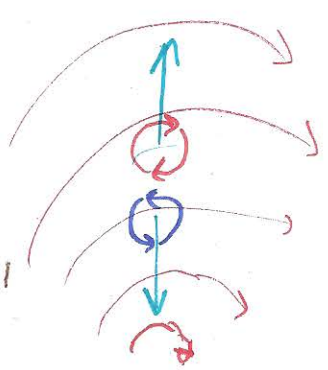
Kinetische energie dichtheid

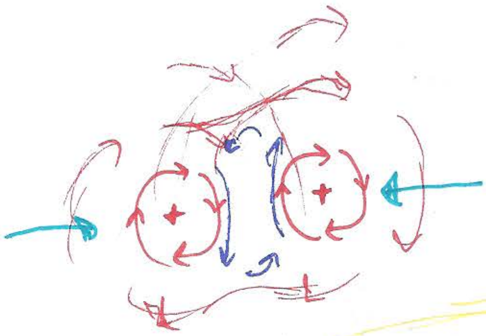
Potentieel energy dichtheid

Stroming komt uit het scherm

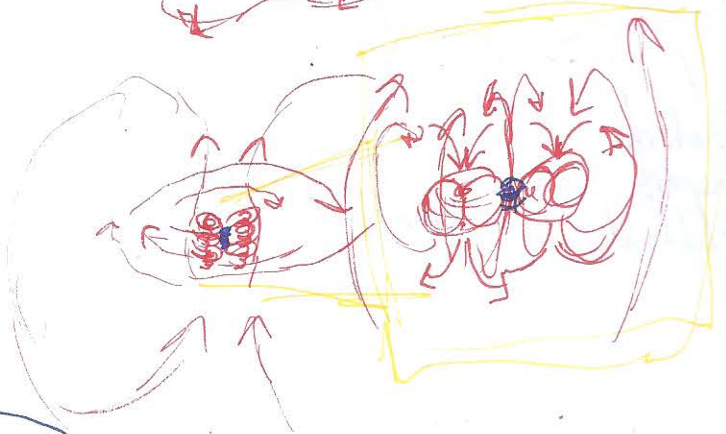


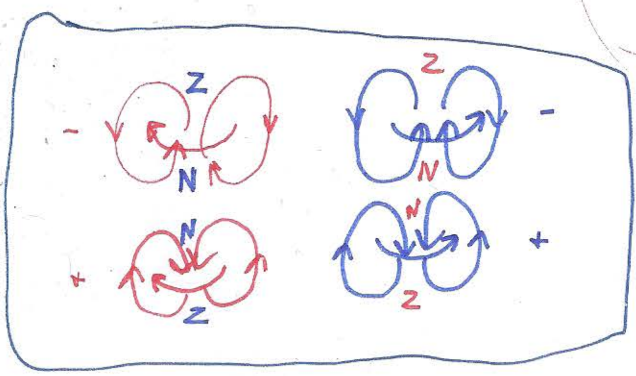
~~Force = Vortexpotent / Velocity~~



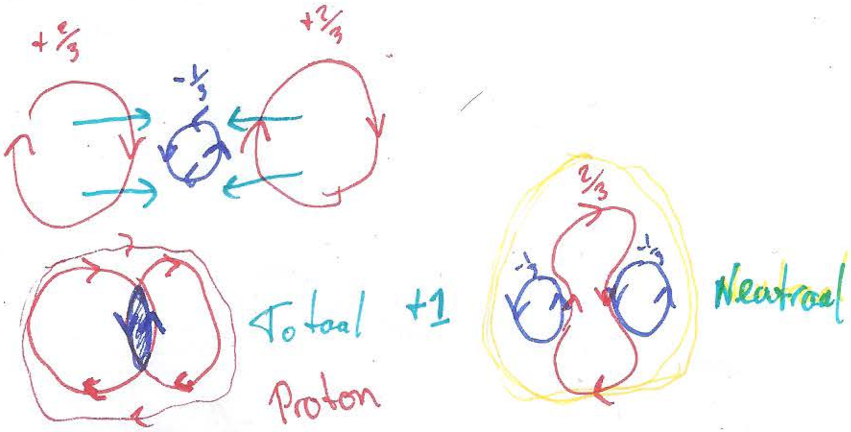


als de kracht groot genoeg is





4 verschillende geladen (Roterende) Æther Vortex Torussen



Super Vloeistof universum

$$\boxed{c^2 = \frac{\partial p}{\partial \rho}}$$

← druk

← dichtheid

← snelheid van geluids golven

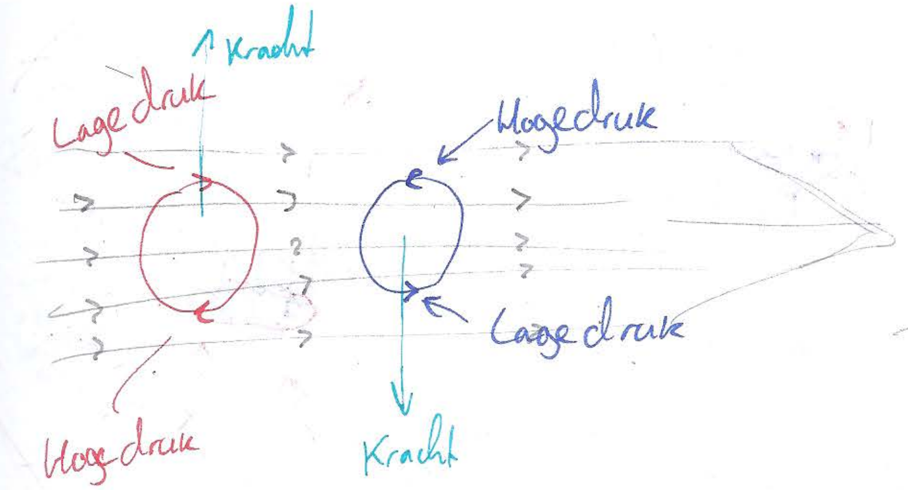
x afstand

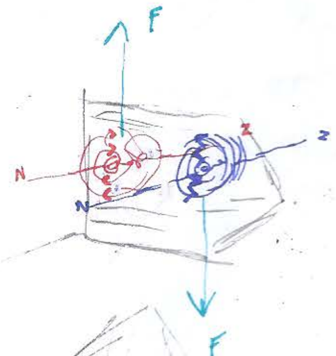
$$P = \frac{\text{Kracht}}{\text{opp}} = \frac{F}{A} = \frac{W}{V} \quad \frac{\text{Energie}}{\text{Volume}}$$

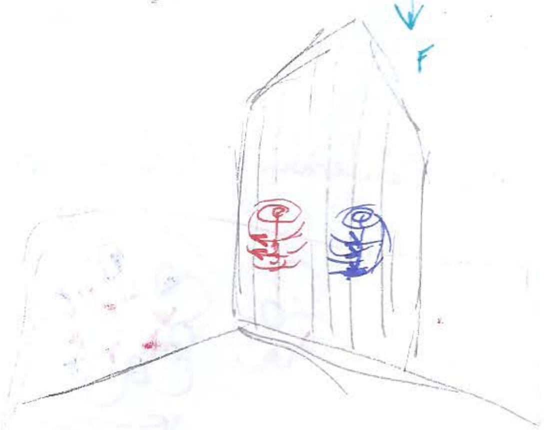
$$\rho = \frac{m}{V} \Rightarrow V = \frac{m}{\rho}$$

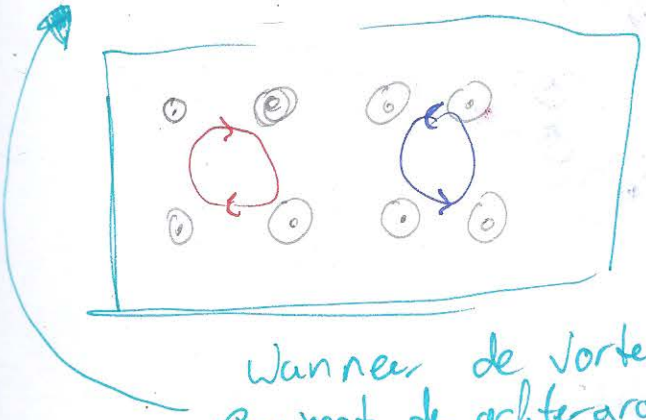
$$P = \frac{E}{\frac{m}{\rho}}$$

$$E = m\frac{P}{\rho} = mc^2$$



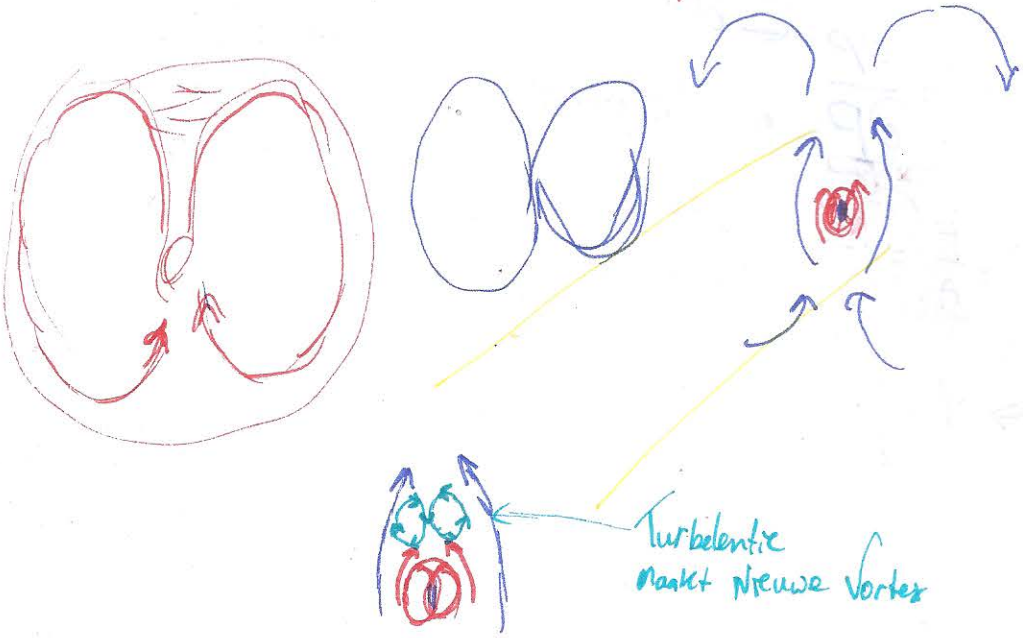


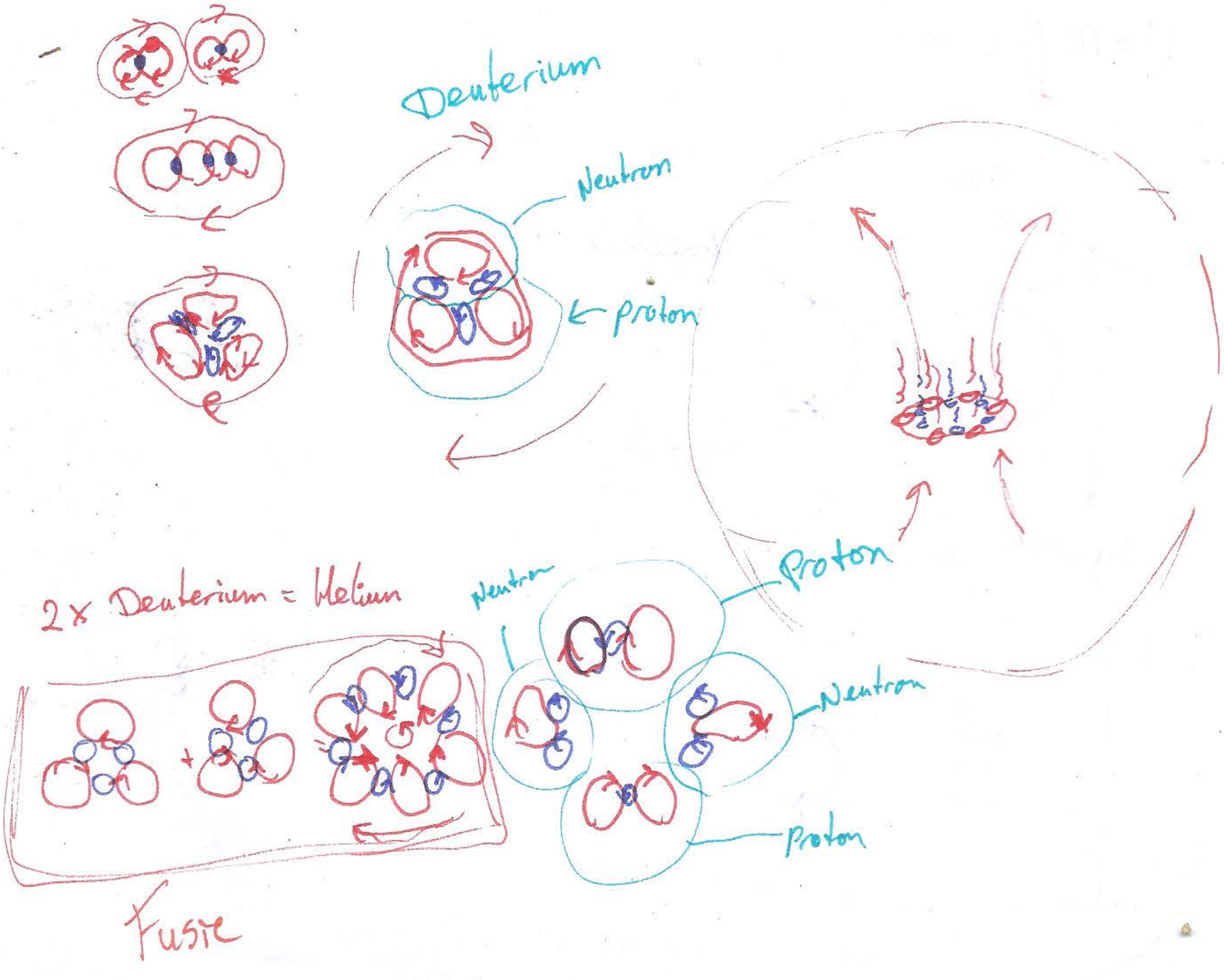




Wanneer de vortexen bewegen
Bewegt de achtergrond relatief

als Vortex met kern een Vortet zonder kern raakt word de potentie groter





Maxwell over Vortex P. 456 Papers 19d'h

als P_0 de druk aan de rand is dan is dat op de grens van kern $P_1 = P_0 + \frac{1}{2} \rho V^2$

druk kern — druk rand — dichtheid — snelheid

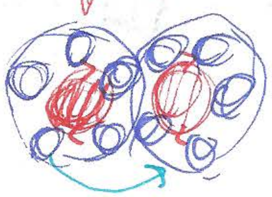
Parralel $P_0 + \frac{1}{4} \rho V^2 = P_2$

$P_1 - P_2 = \frac{1}{4\pi} \mu V^2$

P 486

in de vortex geen Energie verlies

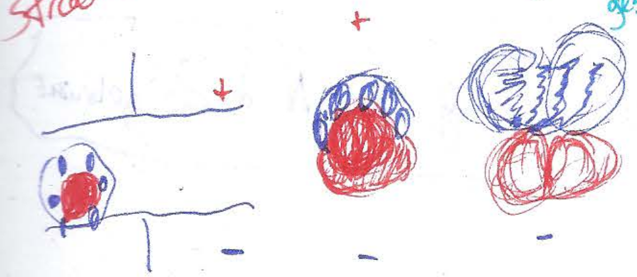
Insulator kan dielectrich zijn



Energie

Vortexen bewegen vrij

Stroom door insulator



Stroom er af ~~stroom~~ gaat weer terug met tegen gesteld ampere

Bij overspringen ontstaat hitte en of licht Stroom loopt

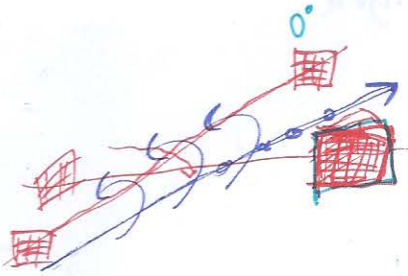
er loopt geen stroom maar toch kan ze stroom verplaatsen

de verplaatsing

$$E_{mf} = -4\pi K^2 R \leftarrow \text{verplaatsing}$$

dielectric coefficient

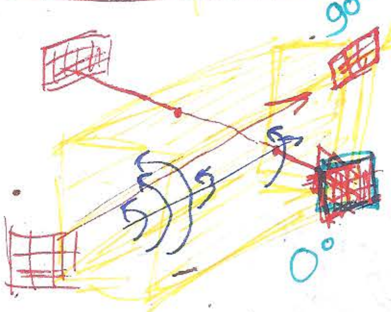
$$I_{\text{lading}} = \frac{dR}{dt}$$



Licht gepolariseerd
Veranded niet als het met
de lading mee beweegt

P. 504

Magneet is anders N en Z boeit niet gaat alleen om welke kant
Volgens Faraday een Roteren fenomeen



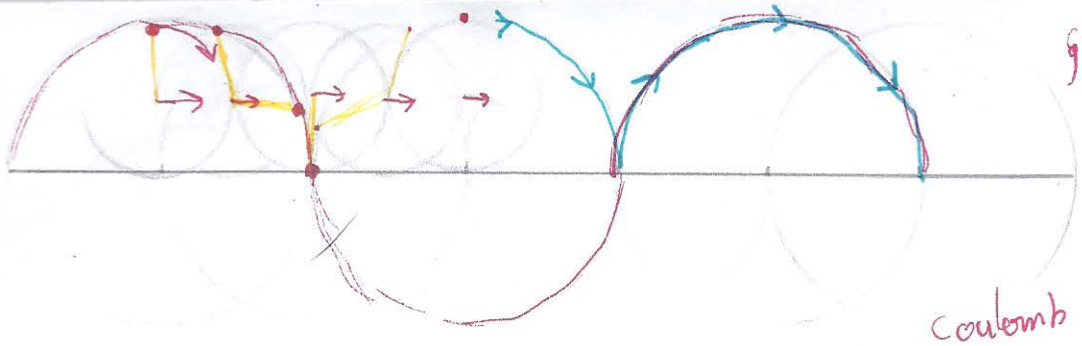
diamagnetisch

De richting van rotatie in diamagnetische is gelijk aan
positieve stroom en magnetische veld is als het roteerd
De andere kant op. West oost

De polarisatie is in een hoek die afhankelijk is
van de intensiteit van Magnetisme

~~Paramagnetisch~~ "ijzer" is het tegenovergesteld
van diamagnetisch

Beide gevallen maakt het niet uit of je N of Z gebruikt



$g = 2e$

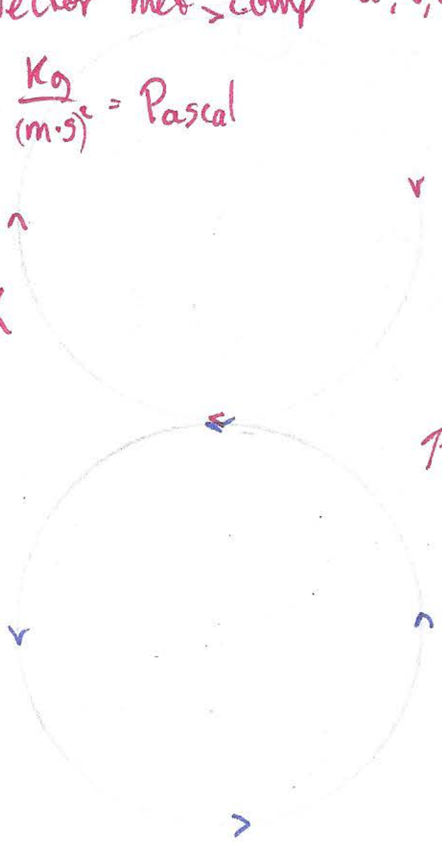
Coulomb x Compton freq

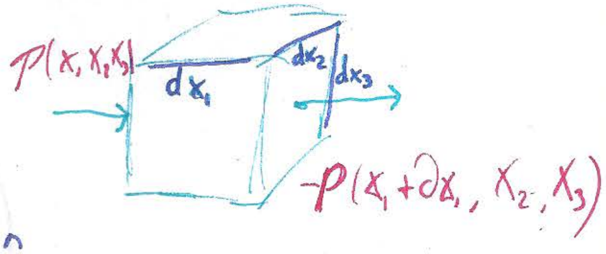
V = stroomsnelheid = Vector met comp u, v, w in m/s

P = druk in $N/m^2 = \frac{kg}{(m \cdot s^2)}$ = Pascal

ρ = dichtheid $\left(\frac{kg}{m^3}\right)$

T = temp absoluut in °K





acceleratie: $a_{(t)} = V\{x_1(t), \cancel{x_2}(t), \cancel{x_3}(t), \cancel{x_0}\}$

$x_1 = x(t),\ \cancel{x_2} = \cancel{x_2}(t),\ x_3 = x_3(t)$

$$\boxed{\frac{\partial a}{\partial t} = \frac{Dv}{Dt}} = v_t + (v \cdot \nabla)v$$

$$= \frac{\partial v}{\partial t} + u\frac{\partial v}{\partial x_1}\ v\frac{\partial v}{\partial x_2}\ w\frac{\partial v}{\partial x_3}$$

acceleratie van vloeistofdeeltje $= \frac{\partial v}{\partial t} + \frac{\partial v}{\partial x_1}\frac{dx_1}{dt} + \frac{\partial v}{\partial x_2}\frac{dx_2}{dt} + \frac{\partial v}{\partial X_3}\frac{dx_3}{dt}$

V = Stroomsnelheid

Magnetisme komt door rotatie von massa

Magnetisme is het zelfde als vorticiteit. Vorticiteit = Kromming tijd ruimte

2 Dimentionaal $\zeta = \nabla \times V_{ector}$

Vorticiteit = 2 × de rotatie op het centrum punt van micro deeltje

$$2 \cdot \zeta_z$$

$$\dot{\phi}_x = \frac{\partial v}{\partial x} \qquad \dot{\phi} = \frac{1}{2}\left(\dot{\phi}_x + \dot{\phi}_y\right) = \frac{1}{2}\left(\frac{\partial v}{\partial x} - \frac{\partial u}{\partial y}\right).$$

$$\dot{\phi}_y = \frac{\partial u}{\partial y}$$

$$\zeta_z = \frac{\partial v}{\partial x} - \frac{\partial u}{\partial y}$$

Vorticiteit

in 2 dimensies is de z as de Normaal van de rest

de acceleratie van deeltje is de vector die aangeeft hoe de vector veranderd

als de stroming irrotationeel is is de Vorticiteit constant

Lagrangiaanse tijds afgeleide

$$\frac{D\phi}{Dt} = \frac{\partial \phi}{\partial t} + v \cdot \nabla \phi = \frac{\partial \phi}{\partial t} + x_1 \frac{\partial \phi}{\partial x_1} x_2 \frac{\partial \phi}{\partial x_2} x_3 \frac{\partial \phi}{\partial x_3}$$

in een stationaire stroming $\left(\frac{\partial v}{\partial t} = 0\right)$

$$\frac{Dv}{Dt} = \frac{\partial v}{\partial t} + \frac{1}{2}\nabla V^2 + (\nabla \times V) \times V$$

een irrotationele ~~vloeistof~~ stromingsveld is de gradient van een potentiele functie

waar de scaler ϕ ~~de~~ snelheid potentie is

$V = \nabla \phi$ dus $\nabla \times (\nabla \phi) = 0$ of $\nabla^2 \phi = 0$

elk potentieel veld is irrotationeel

$\boxed{\text{Irrotationaal \& Potential = Hetzelfde}}$

als een stroming irrotationeel is is het 2D

~~in~~ ~~ditt~~ in cartesian

de snelheid potentiaal passen bij de Laplace formulen

$$\frac{\partial^2 \phi}{\partial x_1^2} + \frac{\partial^2 \phi}{\partial x_2^2} = 0$$

in 2D kan je een constante dichtheid stroming beschrijven met de stroomfunctie ψ = constant dus op de stroming

$$d\psi = \frac{\partial \psi}{\partial x_1} dx_1 + \frac{\partial \psi}{\partial x_2} dx_2 = 0$$

$$\frac{dx_2}{dx_1} = \frac{-\left(\frac{\partial \psi}{\partial x_1}\right)}{\left(\frac{\partial \psi}{\partial x_2}\right)} = \frac{V}{u} \qquad V = -\frac{\partial \psi}{\partial x_1} \qquad u = \frac{\partial \psi}{\partial x_2}$$

$$\frac{\partial u}{\partial x_2} - \frac{\partial V}{\partial x_1} = \frac{\partial}{\partial x_2}\left(\frac{\partial \psi}{\partial x_2}\right) - \frac{\partial}{\partial x_1}\left(-\frac{\partial \psi}{\partial x_1}\right)$$

$$= \frac{\partial^2 \psi}{\partial x_2^2} + \frac{\partial^2 \psi}{\partial x_1^2} = 0$$

Stroming in een cilinder

$$r = \sqrt{x^2 + y^2} \quad \& \quad \theta = \tan^{-1}\left(\frac{y}{x}\right)$$

of

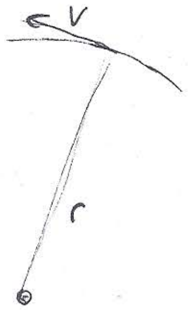
$$x = r\cos\theta \quad \& \quad y = r\sin\theta$$

in termen van R en θ zijn de Gradients van snelheid potentiaal

$$V_r = \frac{\partial \phi}{\partial r} \quad \text{en} \quad V_\theta = \frac{1}{r}\frac{\partial \phi}{\partial \theta}$$

de Laplace formules voor snelheid potentiaal

$$\frac{\partial^2 \phi}{\partial r^2} + \frac{1}{r}\frac{\partial \phi}{\partial r} + \frac{1}{r^2}\frac{\partial^2 \phi}{\partial \theta^2} = 0$$



de Bernoulli formule

snelh
poten

$P + \frac{1}{2}\rho V^2 = P_{totaal}$ in irrotationeel is P_{totaal} constant door de stroming

differentieren op de Normaal as

$\frac{\partial P}{\partial N} + \rho V \frac{\partial V}{\partial N} = \frac{\partial P_{Totaal}}{\partial N}$ de kracht balans $\frac{\partial P}{\partial N} = \frac{\rho V^2}{R}$

Waar R de radius van de kromming is
combineren we deze formules

$$\frac{\partial P_{totaal}}{\partial N} = \frac{\rho V^2}{R} + \rho V \frac{\partial V}{\partial N} = \rho V\left(\frac{V}{R} + \frac{\partial V}{\partial N}\right)$$

Maar in een cilinder is de vorticiteit

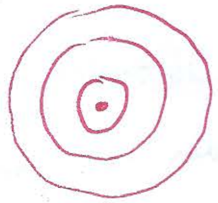
$$\zeta = \frac{V}{R} + \frac{\partial V}{\partial N}$$

dit is gelijk aan 2 maal de gemiddelde snelheid van rotatie

$\zeta = 2V$

Vortex

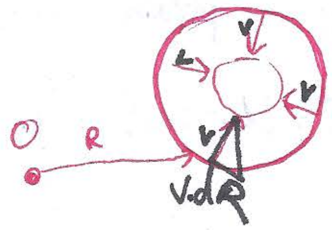
snelheid potentiaal = $\phi = -\frac{\Gamma}{2\pi}\theta$



$$V_\theta = \frac{1}{r}\frac{\partial\phi}{\partial\theta} = -\frac{\Gamma}{2\pi r}$$

L = gesloten contour

$$\Gamma_{(t)} = \oint_{L(t)} V\cdot\partial R \quad \left(\frac{m^2}{s}\right)$$

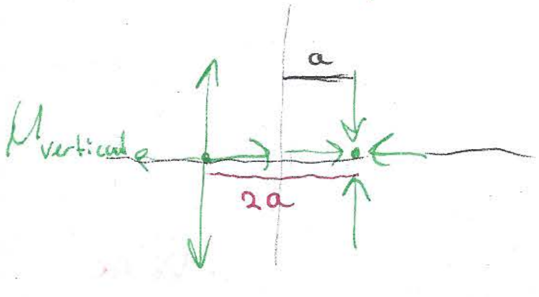


$$V = \frac{DR}{Dt}$$

$$\oint_{\partial s} V\cdot\partial s = \iint_s (\nabla\times V)\cdot n\,\partial s$$

$$\Gamma = -\int_0^{2\pi}\frac{-\Gamma}{2\pi r}\,r\,\partial\theta$$

Super positie

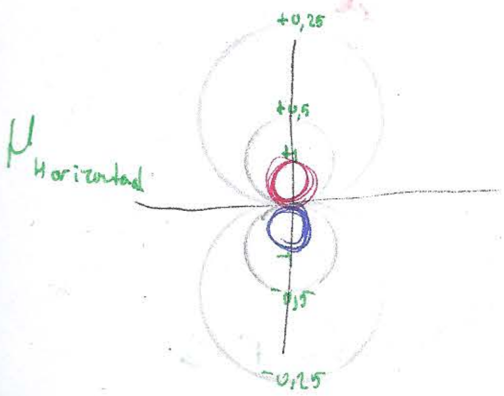


snelheid potentiaal in superpositie

$$\lim_{\epsilon\to0}\left[\ln(1+\epsilon)\right] = \epsilon - \frac{\epsilon^2}{2} + \frac{\epsilon^3}{3} + \dots$$

$$\phi_h = \lim_{a\to0}\left[\frac{\Gamma}{2\pi r}\ln\sqrt{(x+a)^2+y^2} - \frac{\Gamma}{2\pi r}\ln\sqrt{(x-A)^2+y^2}\right]$$

$$\phi_h = \frac{a\Gamma}{\pi}\frac{x}{r^2} = \mu_h\frac{x}{r^2} = \mu_h\frac{\cos\theta}{r}$$



de dubblet kracht

$$\mu_h = \frac{a\Gamma}{\pi}$$

snelheid potentiaal

$$\phi_v = \frac{a\Gamma}{\pi}\frac{y}{r^2} = \mu_v\frac{y}{r^2} = \mu_v\frac{\sin\theta}{r}$$

Potentiele Stroming langs een circel kan gezien worden als een Superpositie van een stroming paralel aan de x as met een Horisontale dubbel

Potentiele stroming $\phi = U_x + \mu \frac{x}{x^2+y^2}$

of in polaire Coordinaten

$$\phi = U r \cos\theta + \mu \frac{\cos\theta}{r} = \cos\theta\left(Ur + \frac{\mu}{r}\right)$$

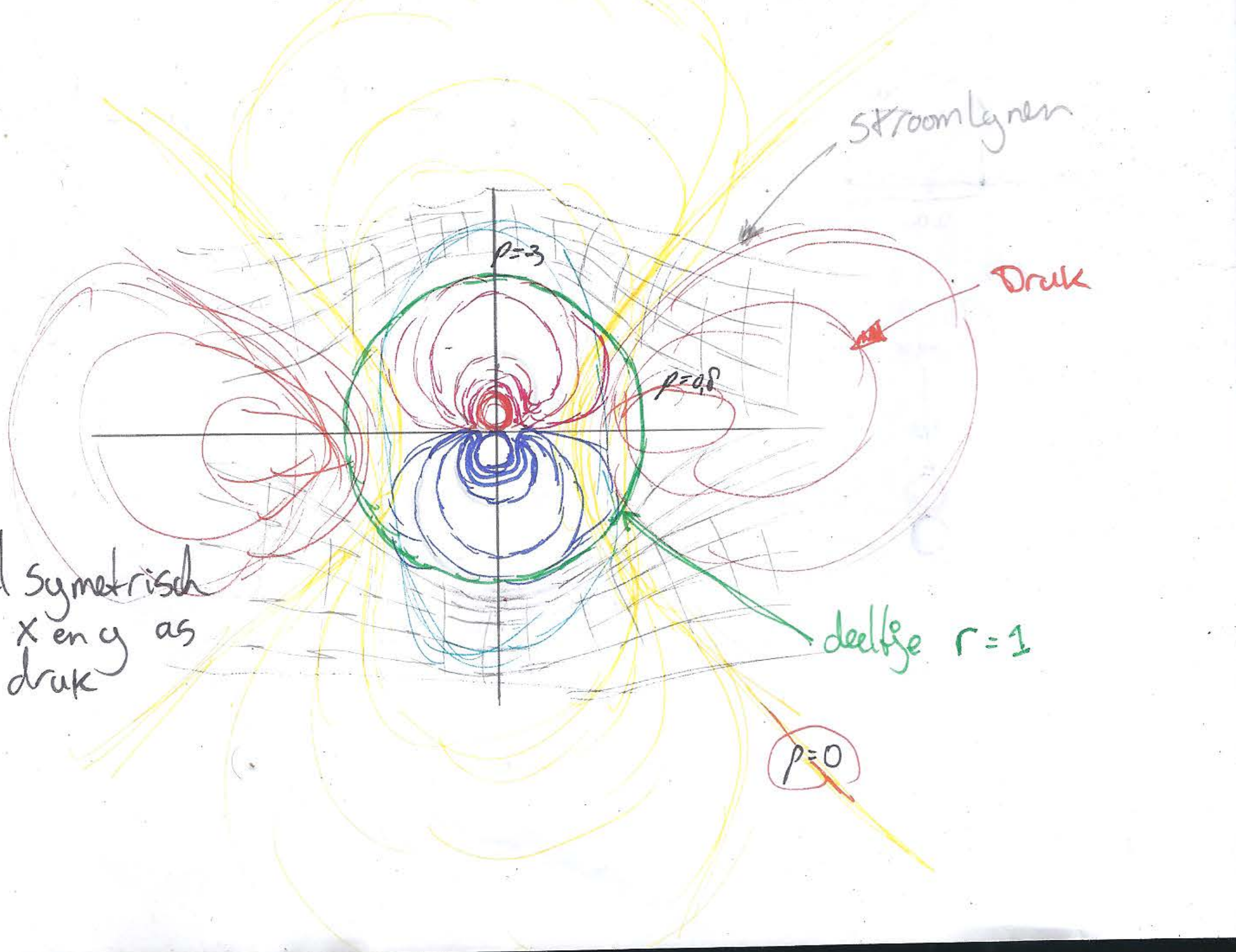
de radiale en tang componenten van snelheid

$$V_r = \frac{\partial \phi}{\partial r} = \cos\theta\left(U - \frac{\mu}{r}\right)$$

$$V_\theta = \frac{1}{r}\frac{\partial \phi}{\partial \theta} = -\sin\theta\left(Ur + \frac{\mu}{r}\right)$$

bij de radiale is de snelheid 0 als $r = \sqrt{\mu/U}$

als $\mu = U$ dan $r = R = 1$



Totaal symetrisch op de x en y as qua druk een dubblet de tang snelheid Vector

$$V_\theta = -2U \sin\theta$$

snelheid = 0 op $\theta = 0$ & $\theta = \pi$

Max op $V = 2U$ bij schouders $\theta = \pm\pi$

Min druk ook op $\theta = \pm\pi$

druk Coefficient $C_p = \dfrac{P - P_\infty}{\frac{1}{2}\rho U^2}$

P_∞ = druk vrije stroming bij snelheid gelijk aan U

bij Constante dichtheid potentiele stroming de Bernoulli word

$$C_p = 1 - \frac{V_r^2 + V_\theta^2}{U^2}$$

de vortex sterker maken heeft geen effect op beweging

& Lift en d Drag force zijn 0 door symetry

snelheid potentiaal voor stroming

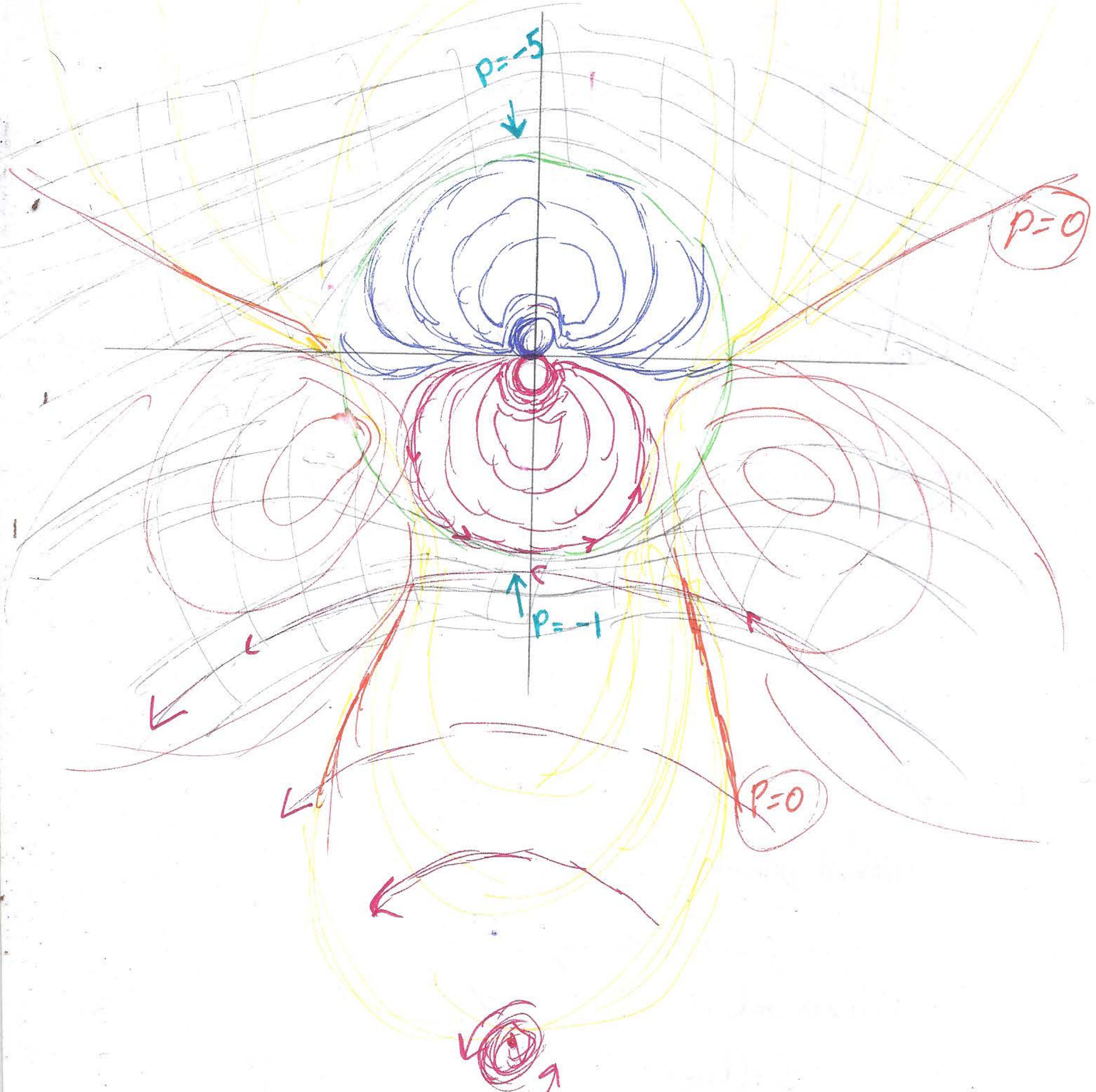
$$\phi = U\cos\theta\left(r + \frac{1}{r}\right) - \frac{\Gamma}{2\pi}\theta$$

snelheid onderdelen

$$V_r = U\cos\theta\left(1 - \frac{1}{r^2}\right)$$

$$V_\theta = U\sin\theta\left(1 + \frac{1}{r^2}\right) - \frac{\Gamma}{2\pi r}$$

X as is Niet symetrisch resultaat = Lift



op Circel $r = 1$ is de druk

$$p = p_t - \frac{1}{2}\rho V_\theta^2$$

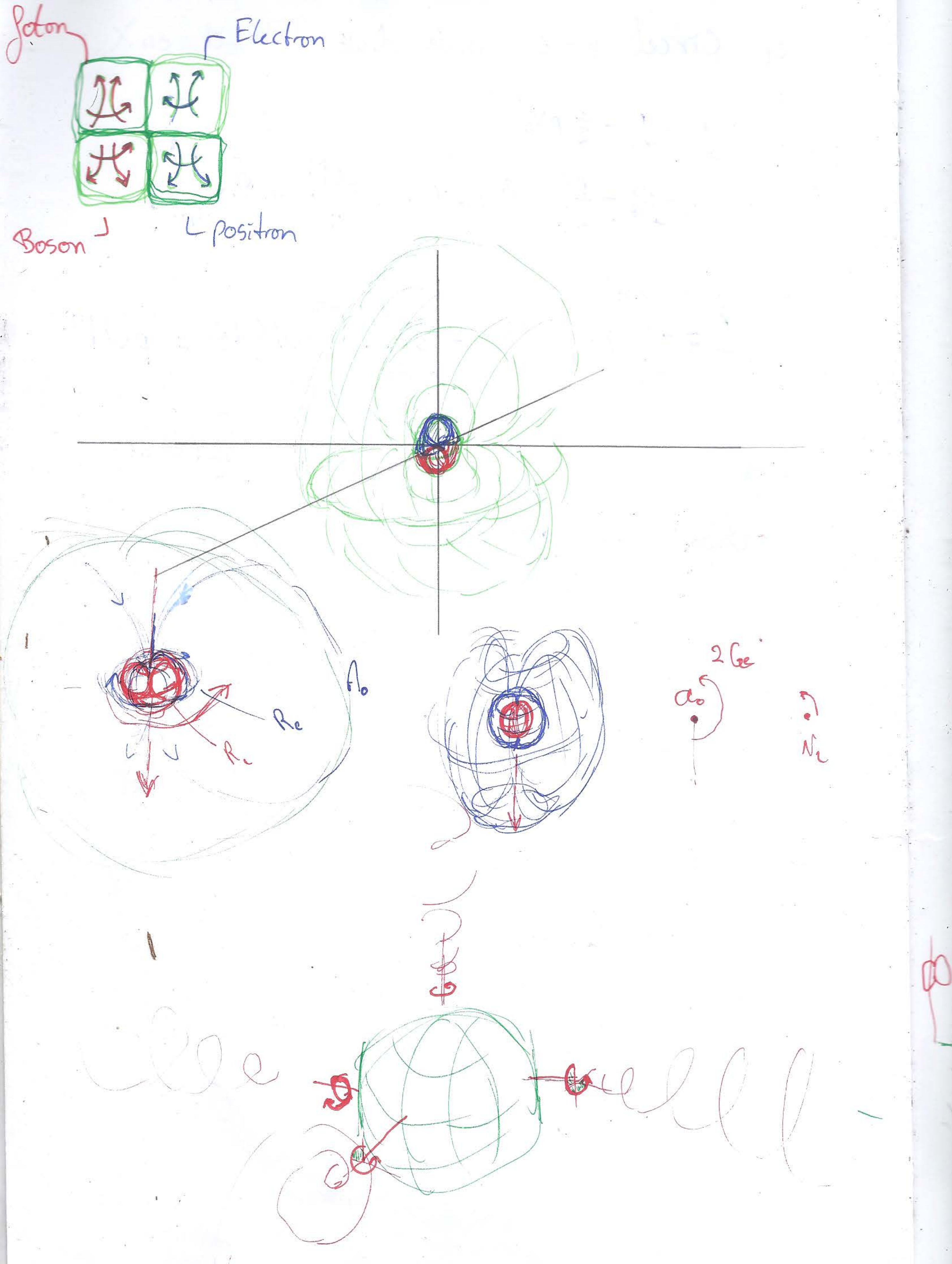
$$= p_t - \frac{\rho}{2}\left[4U^2 \sin^2\theta + 2\frac{U\Gamma}{\pi}\sin\theta + \frac{\Gamma^2}{4\pi^2}\right]$$

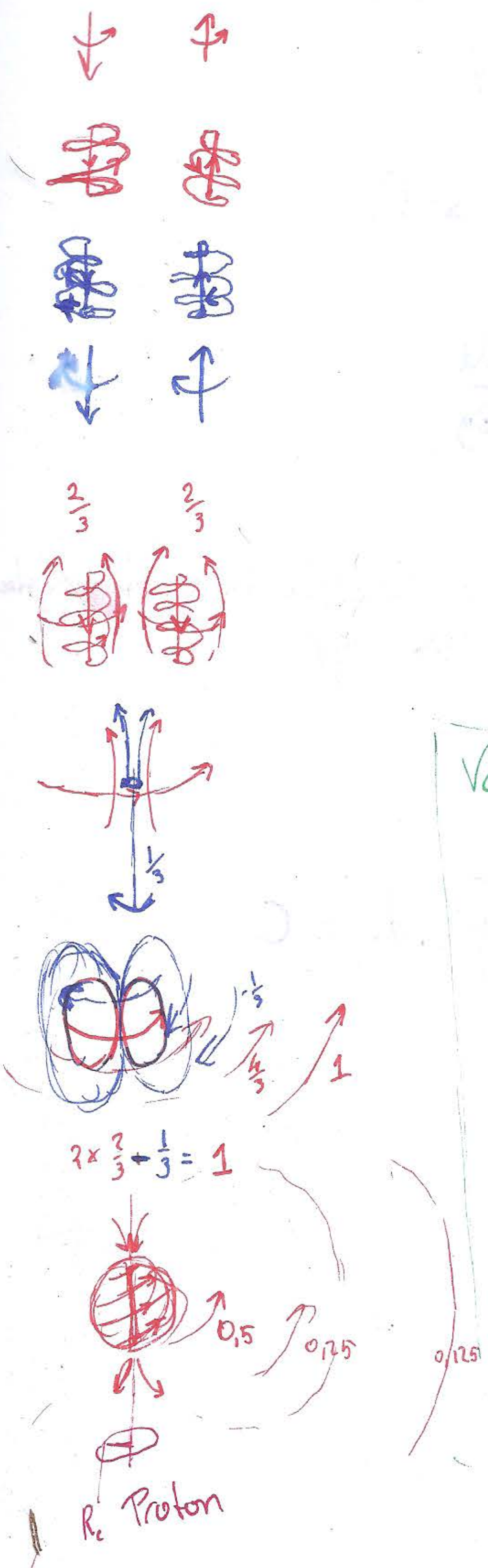
Lift
integraal van druk rond Circel

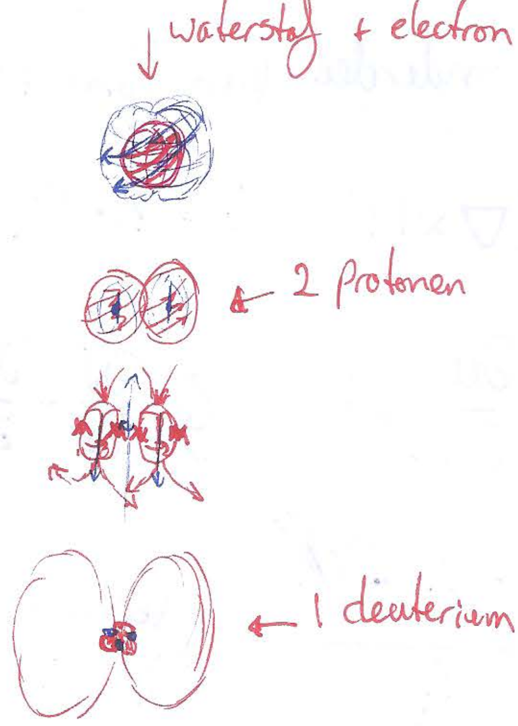
$$l = -\int_0^{2\pi} p \sin\theta \, d\theta = \frac{\rho U \Gamma}{\pi}\int_0^{2\pi} \sin^2\theta \, d\theta = \rho U \Gamma$$

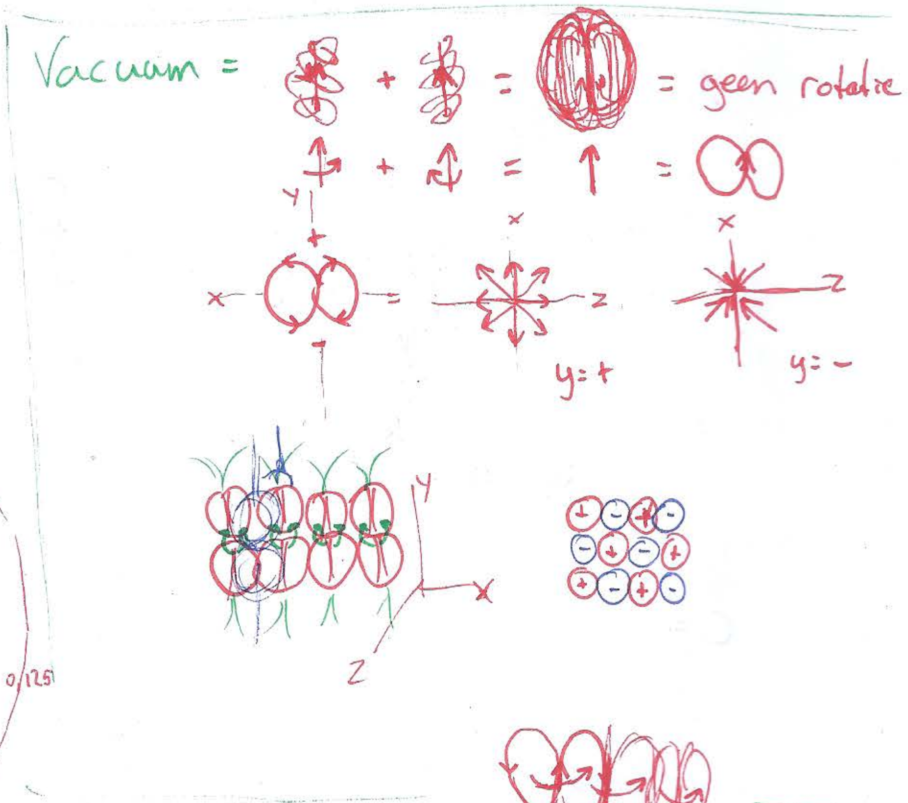
want $\int_0^{2\pi} \sin^2\theta \, d\theta = \pi$

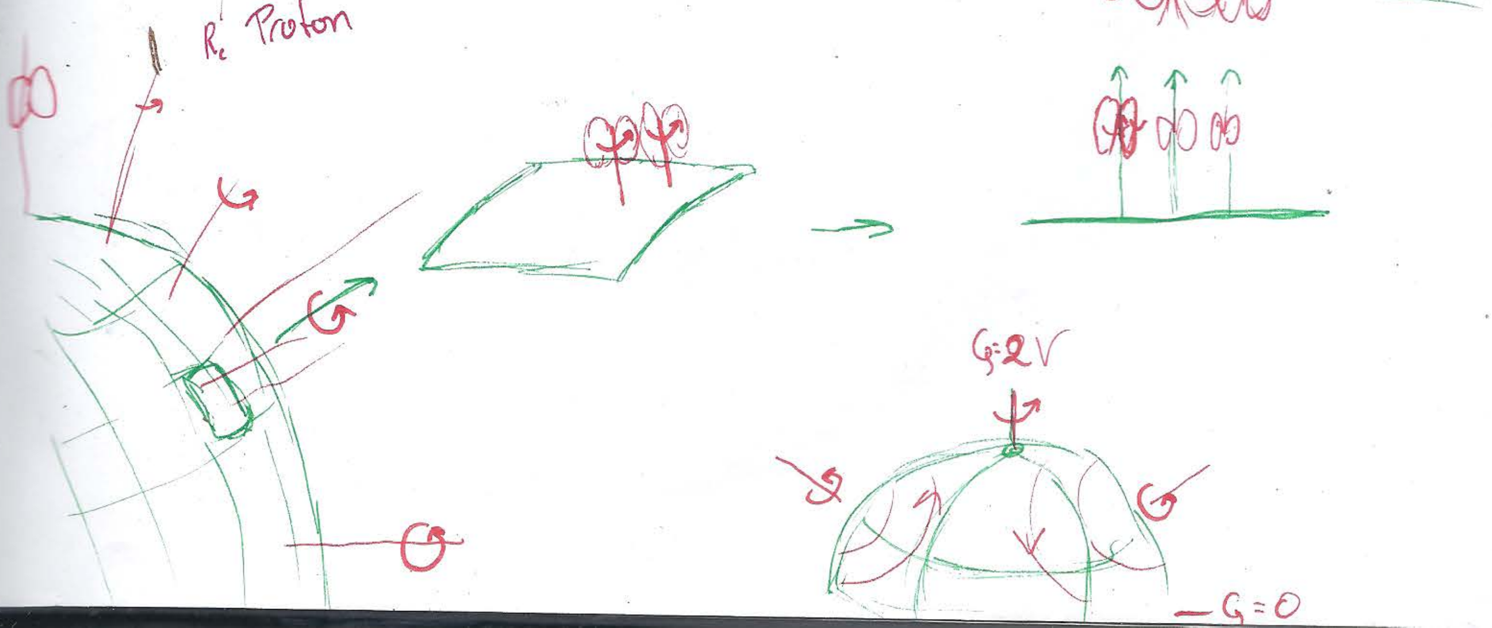
drag $d = -\int_0^{2\pi} p \cos\theta \, d\theta = 0$


Foton
Electron
Boson
positron
Re


2/3
2/3
1/3
1/3
2/3
1
2x 2/3 + 1/3 = 1
0,5
0,125
0,125
Rc Proton


waterstof + electron
2 Protonen
1 deuterium


Vacuum =
= geen rotatie
y
x
z
y = +
y = −
y
x
z


G=2V
G=0

Volume $V = \frac{4}{3}\pi R^3$

dichtheid $\rho = \frac{M}{V}$

$$E(\nu,T)\,\partial\nu = \frac{8\pi\nu^2}{c^3}\,\frac{h\nu}{e^{h\nu/kt}-1}\,\partial\nu$$

$$\nu = \frac{c}{\lambda}$$

$$\partial\nu = -\frac{c}{\lambda^2}\,\partial\lambda$$

$$E(\lambda,t)\,\partial\lambda = \frac{8\pi hc}{\lambda^5}\,\frac{1}{(e^{hc/\lambda kT}-1)}\,\partial\lambda$$

$\frac{\partial E}{\partial\lambda} = 8\pi hc$ ...... Wiens Law

$$E_{gem} = \frac{1}{N} N_n E_n = \left(1-e^{-\frac{\varepsilon_0}{kt}}\right)(n\varepsilon_0)\,e^{\left(\frac{n\varepsilon}{kT}\right)}$$

$$E_{gem} = \frac{\varepsilon_0}{e^{(\varepsilon/kt)}-1} = \frac{hf}{\left(e^{\left(\frac{hf}{kt}\right)}-1\right)} = \frac{h\frac{c}{\lambda}}{\left(e^{\left(\frac{hc}{\lambda kt}\right)}-1\right)}$$

Intensiteit $= \frac{c}{4}\left(\frac{8\pi}{\lambda^4}\right)\left(\frac{h\frac{c}{\lambda}}{e^{\frac{hc}{\lambda kt}}-1}\right.$

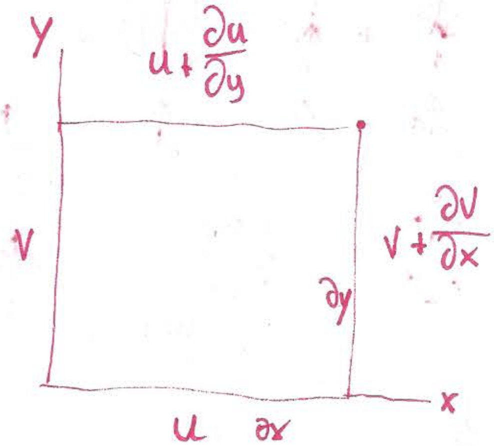
Verticaal onderdeel van Vorticiteit

$$\eta \equiv k \cdot (\nabla \times U) \qquad \zeta \equiv k \cdot (\nabla \times U)$$

$$\eta = \frac{\partial v}{\partial x} - \frac{\partial u}{\partial y} + f \qquad \zeta = \frac{\partial v}{\partial x} - \frac{\partial u}{\partial y}$$

$$\zeta = \lim_{A \to 0} \frac{\left(\oint V \cdot dL\right)}{A}$$

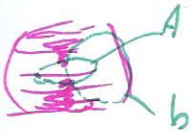
Verticaal is circulatie in gesloten system gedeeld door opp



$$\oint V \cdot dL = C$$

$C =$

Torus



A = ⬭ = Ring

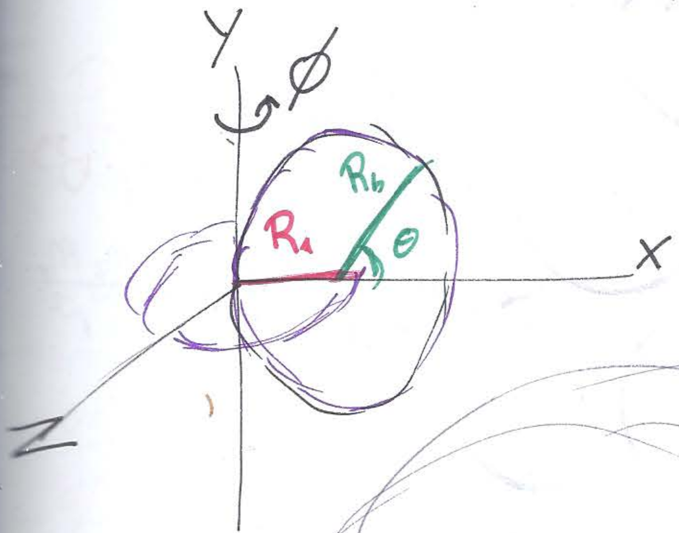
B = O = PyP

inhoud $= (2\pi R_A)(2\pi R_b)$

Opp $= (\pi R^2)(2\pi R)$

als $A = B$ is er harmonie

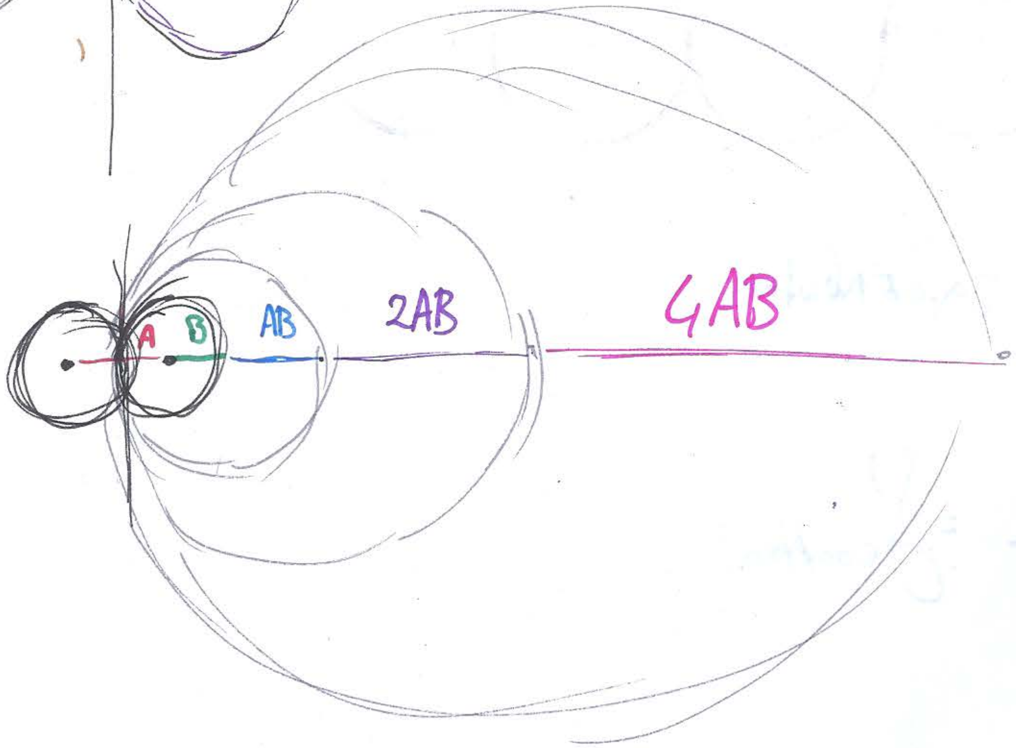
$A \geq B$ is er Chaos

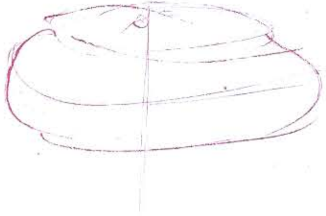


$x = \cos(\phi)\left(R_A + R_b \cos(\theta)\right)$

$y = \sin(\phi)\left(R_A + R_b \cos(\theta)\right)$

$z = R_b \sin(\theta)$





9/11

Volume torus : $2\pi^2 R_e r_c^2$

$V = E_{mj}$

Frank Znidarsic

$F = \frac{K}{X}$ intensity $= \frac{Q}{c}$ $E = \frac{1}{2} C V^2$ $Q = CV$

$E = \frac{Q}{2C_q}$ $C_q = 1{,}56 \cdot 10^{-25}$ Faradz

dirac Carge Number
electric vs Gravity $= 2.27 \cdot 10^{39}$

Univers $= 4\pi \varepsilon_0 R_{\cancel{u}} = C_u$

$C_q = C_u / ((2\pi)^2 \angle_n)$

$F_c = \frac{e^2}{4\pi \varepsilon r^2} = F_g = G \frac{m_e M_p}{r^2}$

$\frac{F_c}{F_g} = \frac{e^2}{4\pi \varepsilon G m_e M_p}$

2 electronen
$4{,}2 \cdot 10^{42}$

$F = \frac{Q^2}{4\pi \varepsilon_0 2R_p^2} = 29.05$ Newton

$\frac{1}{2\pi} \frac{(F/R_H)^{\frac{1}{2}}}{m^e} = f_{compton}$

$R_H = a_0$

golven in Vloeistof

$$c^2 = \frac{\partial P_{resure}}{\partial \rho_{density}} \qquad \frac{\partial^2 p}{\partial x^2} - \frac{1}{c^2}\frac{\partial^2 p}{\partial t^2} = 0$$

$$P_{res} = \frac{Forse}{Opper\text{-}vlakte} \qquad P \cdot A_{fstand} = \frac{F\,afst}{Opp\ afs} = \frac{Energy}{Volume}$$

$$\rho = \frac{Mass}{Volume} \qquad V = \frac{m}{\rho}$$

$$P_{ress} = \frac{E}{V} = \frac{E}{\frac{m}{\rho}} = \frac{E\rho}{m}$$

$$\partial P = \frac{E}{m} \cdot \partial \rho$$

$$\frac{\partial P}{\partial \rho} = \frac{E}{m} = c^2$$

K = golfnummer

$K = \frac{2\pi}{\lambda} \quad \omega = 2\pi f$

$V = \lambda f = \frac{2\pi}{K}\frac{\omega}{2\pi} = \frac{\omega}{K}$

$\psi = \sin(Kx - \omega t)$

$\psi = \cos(kx - \omega t)$

$\psi = e^{i(kx \cdot \omega t)}$

$\frac{d\psi}{dx} = -K\cos(kx - \omega t)$

$\frac{d^2\psi}{dx^2} = -K^2\sin(kx - \omega t)$

$\frac{d^2\psi}{dx^2} = -k^2\psi$

$\frac{d\psi}{dx} = -\omega\cos(kx - \omega t)$

$\frac{d^2\psi}{dx^2} = -\omega^2\sin(kx - \omega t)$

$\frac{d^2\psi}{dx^2} = -\omega^2\psi$

$\psi = -\frac{1}{K^2}\frac{\partial^2\psi}{\partial x^2}$

$\psi = -\frac{1}{\omega^2}\frac{\partial^2\psi}{\partial t^2}$

$$\boxed{\begin{aligned} \frac{\partial^2\psi}{\partial x^2} &= \frac{\omega^2}{K^2}\frac{\partial^2\psi}{\partial t^2} \\ \frac{\partial^2\psi}{\partial x^2} &= V^2\frac{\partial^2\psi}{\partial t^2} \end{aligned}}$$

Wave equations

$$\nabla \times E = -\frac{\partial B}{\partial t}$$

$$\nabla \times \nabla \cdot E = -\frac{\partial B}{\partial t}$$

$$\nabla \times \nabla \times E = -\frac{\partial}{\partial t} \nabla \times B$$

$$\nabla \times B = \mu_0 \varepsilon_0 \frac{\partial E}{\partial t}$$

$$-\frac{\partial}{\partial t} \nabla \times B = -\mu_0 \varepsilon_0 \frac{\partial^2 E}{\partial t^2}$$

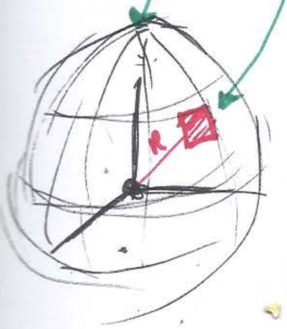
$$\nabla \times \nabla \times E = \underbrace{\nabla(\nabla \cdot E)} - \nabla^2 E \qquad \nabla \times B = \mu_0 \left(J + \varepsilon_0 \frac{\partial E}{\partial t} \right)$$

$$-\nabla^2 E = -\mu_0 \varepsilon_0 \frac{\partial^2 E}{\partial t^2}$$

$E \times B$ = Richting

$$\frac{E}{B} = c$$

1 $\oint E \cdot \partial A = \frac{\Sigma Q}{\varepsilon_0}$

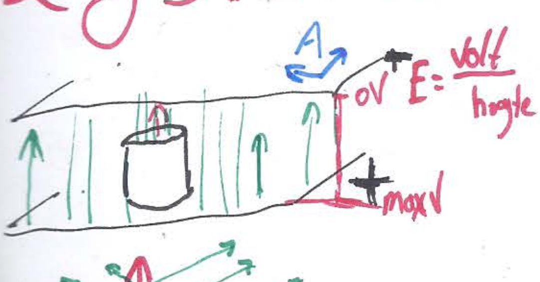


$$F_{orce} = E q$$

$$E = \frac{Q}{4\pi \varepsilon_0 R^2}$$

$$\text{Volt} = \mathcal{E}_{mf} = \frac{\partial B}{\partial t} \partial A$$

2 $\oint B \cdot \partial A = 0$



Heft elkaar op
altijd 90°

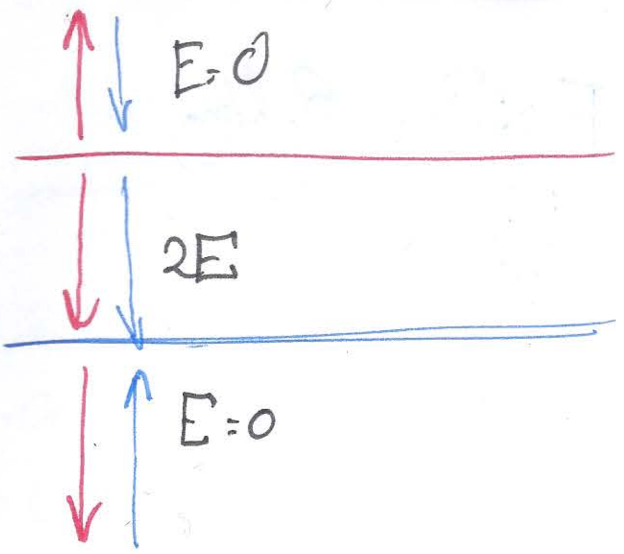
$$E \cdot \partial A = \frac{\Sigma Q}{\varepsilon_0}$$

$$E \cdot 2\pi R^2 = \frac{\sigma \pi R^2}{\varepsilon_0}$$

$$E = \frac{\sigma}{2\varepsilon_0}$$

σ = dichtheid Lading

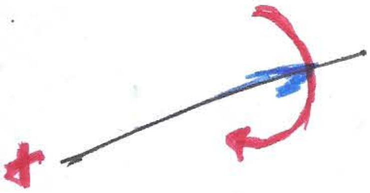
$$\Sigma Q = \sigma A$$



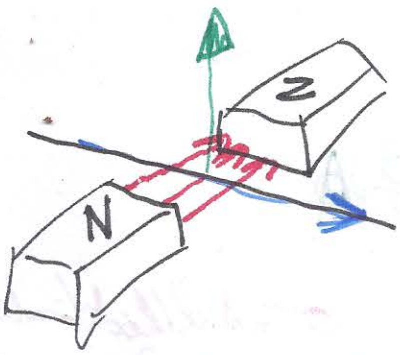
$$E = \frac{\text{Newton}}{\text{Coulomb}} \text{ of } \frac{\text{Voltage}}{\text{Meter}}$$

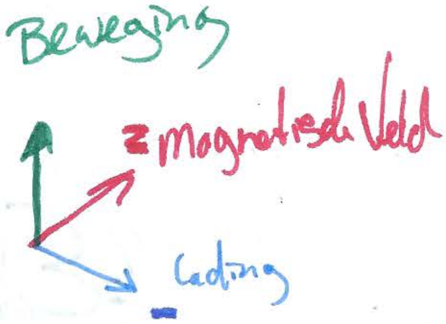
$$B = \frac{\mu_0 I}{2\pi R} \qquad \oint B \cdot \partial L = \mu_0 I$$

Magnetisch Veld = flux dichtheid in Tesla



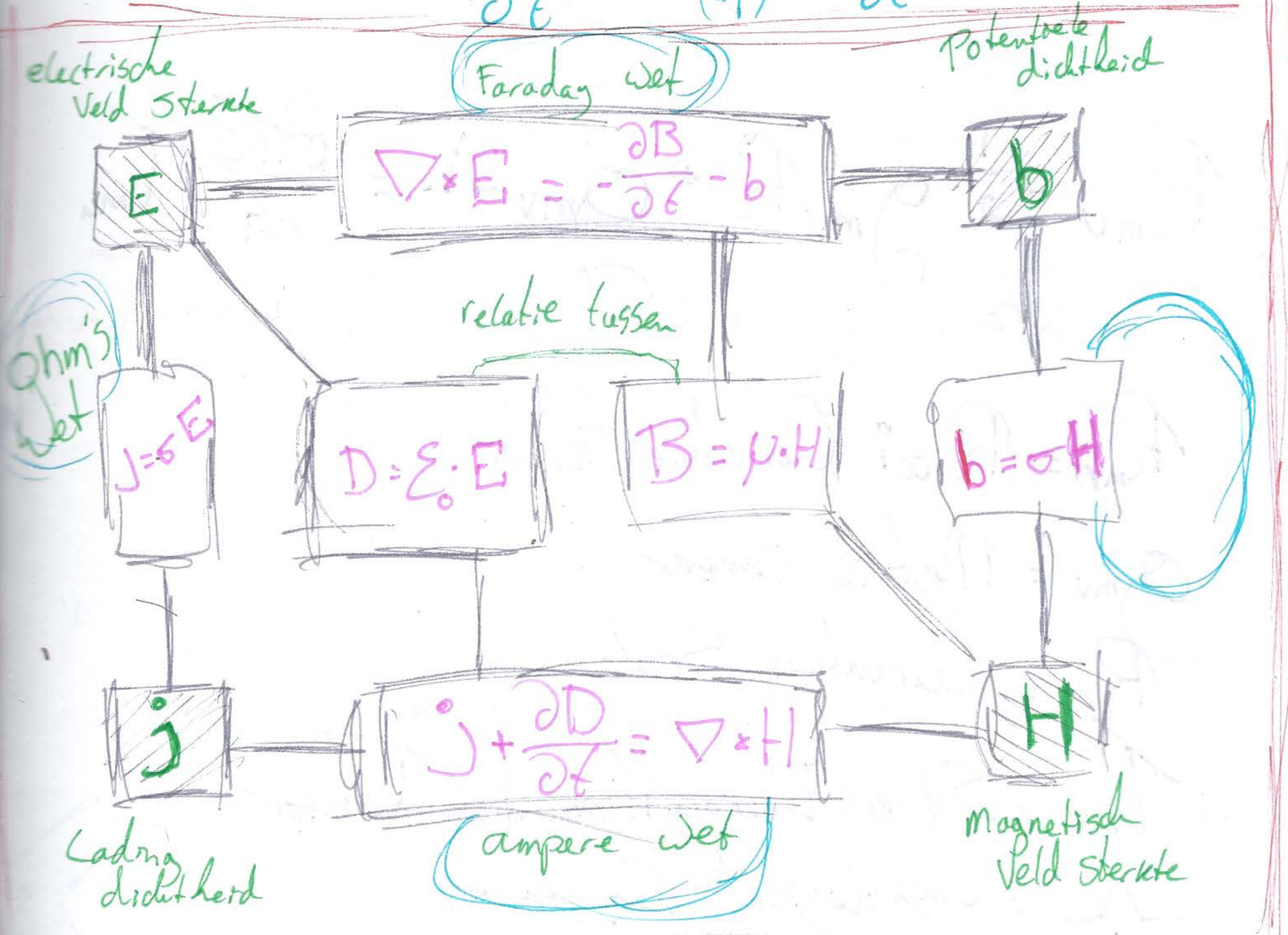
Rechterhand regel

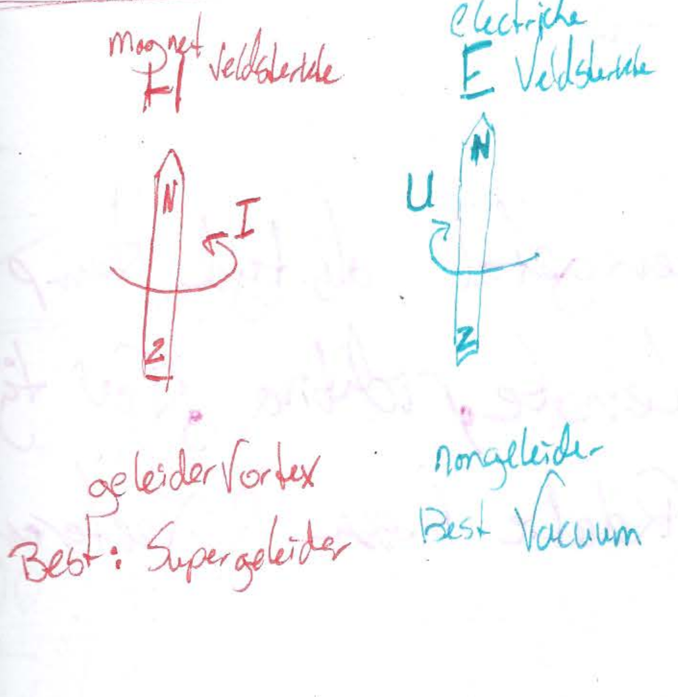




$$\text{Force} = BIL \cos \phi$$

$$\Delta E c^2 = \frac{\partial^2 E}{\partial t^2} + \left(\frac{1}{\tau}\right)\cdot\frac{\partial E}{\partial t}$$





Yin Electrische Vortex Zuid Pool			Yang Magnetische Vortex Noord Pool		
R	(Ω)	Weerstand	R^{-1}	(Ω^{-1})	Conductie
U	(V)	Voltage	I	(A)	Lading
E	($\frac{V}{m}$)	E field	H	($\frac{A}{m}$)	M field
Q	(As)	Lading	ϕ	(Vs)	Mag flux
D	$\frac{As}{m^2}$	Elec verplaatsing	B	$\frac{Vs}{m^2}$	Mag Inductie
ε_0	$\frac{As}{Vm}$	Elec veld const	μ_0	$\frac{Vs}{Am}$	Mag veld const
ρ_{el}	$\frac{As}{m^3}$	Elec lading dichtheid	ρ_{mag}	$\frac{Vs}{m^3}$	Mag lad dichtheid
		inductie wet			Amperes wet
		Potentieel Vortex			eddy Lading

Relativiteit $\boxed{c = \frac{\Delta r}{\Delta t}}$

$$\underset{\text{afstand}}{r} = \underset{\text{Lichtsnelheid}}{c} \cdot \underset{\text{tijd}}{t}$$

$$R + \Delta r = (C + \Delta C) \cdot (t + \Delta t)$$

$$\Delta r = (c \cdot \Delta t) + (T \cdot \Delta c) + (\Delta c \cdot \Delta t)$$

Objectiviteit $\boxed{\Delta c = \frac{\Delta r}{T}}$

$$r = c \cdot t$$

$$r + \Delta r = (c + \Delta c) \cdot (T + \Delta t)$$

$$r + \Delta r = (ct) + (c\Delta t) + (\Delta c t) + (\Delta c \Delta t)$$

$$\Delta r = (c \cdot \Delta t) + (t \Delta c) + (\Delta c \Delta t)$$

$$\Delta R = c \cdot \Delta t + t \cdot \Delta c + \Delta c \, \Delta t$$

twee mogelijkheden

Relativiteit	Objectiviteit
$\Delta c = 0$	$\Delta t = 0$
$c = \text{Constant}$	$t = \text{Constant}$
$c = \dfrac{\Delta r}{\Delta t}$	$\Delta c = \dfrac{\Delta r}{t}$
Δt = tijdverschil	Δc = Snelheid Verschil
Δr = Zichtbaar krimpen	Δr = Physiek krimpen

Licht snelheid c	$c = \text{Constant}$	$c \Rightarrow r$
Veldsterkte H $\frac{\text{Amp}}{\text{Meter}}$, E $\frac{\text{Volt}}{\text{meter}}$	$H \approx> \frac{1}{r^2}$ $E \approx> \frac{1}{r^2}$	$H \approx> \frac{1}{r}$ $E \approx> \frac{1}{r}$
$\varepsilon_0 \cdot \mu_0 = \frac{1}{c^2}$ μ $\frac{\text{VoltSec}}{\text{Amp Meter}}$ ε_0 $\frac{\text{AmpSec}}{\text{Volt meter}}$	$\mu_0 = \text{Const}$ $\varepsilon_0 = \text{Const}$	$\mu_0 = \frac{1}{r}$ $\varepsilon_0 = \frac{1}{r}$
$B = \mu \cdot H$ $B: \frac{\text{Volt Sec}}{m^2}$ $D = \varepsilon \cdot E$ $D = \frac{\text{amp Sec}}{m^2}$	$B = \frac{1}{r^2}$ $D = \frac{1}{r^2}$	$B = \frac{1}{r^2}$ $D = \frac{1}{r^2}$

golf functie

$$\Delta E = \text{grad div } E - \text{Rot Rot } E = \frac{1}{c^2}\frac{\partial^2 E}{\partial t^2}$$

$$\Delta E = \nabla\ \nabla \cdot E - \nabla \times \nabla \times E$$

N. Tesla	H. Hertz
Scalar Waves zijn electric of Magnetis	ElectroMagnetic Wave
Longitudal	Transverse
Vanuit snelheid	Per frequentie
• ($V > c$) Neutrino Straling, Morphogenetic field	* Cosmis Radiatie
• ($V = c$) fotons	* Röntgen
• ($V < c$) Plasma golf, Thermale Vortex, Biofotons, aarde Radiatie	* UV
	• Licht
	• infrarood
	• micro golf
	• Radio golf

($V = 0$) Noise

Subjectiviteit	Relativiteit	Objectiviteit
Newton Maxwell	Einstein	
galilei transformatie $c = \infty$	Lorentz Transformatie $C = \text{Constant}$	$G_e = \text{Constant}$ $C = \text{Variabel}$

$R = c \cdot t$ afstand door Jaiste tijd bepalen

$dR = (c \cdot dt) + (t \cdot dc)$ differentieren

$$c = \frac{dr}{dt} - t \cdot \frac{dc}{dt} \qquad t = \frac{dr}{dc} - c \cdot \frac{dt}{dc}$$

$$c = \frac{dr}{dt} - t \cdot \frac{\partial^2 r}{\partial t^2} + t^2 \cdot \frac{\partial^3 r}{\partial t^3} - t^3 \cdot \frac{\partial^4 r}{\partial t^4} + t^4 \cdot \frac{\partial^5 r}{\partial t^5} \ldots$$

$$t = \frac{\partial r}{\partial c} - c \frac{\partial^2 r}{\partial c^2} + c^2 \frac{\partial^3 r}{\partial c^3} - c^3 \frac{\partial^4 r}{\partial c^4} + c^4 \frac{\partial^5 r}{\partial c^5} \ldots$$

$c = \text{Constant}$ $\qquad$ $T = \text{Constant}$

$\Delta r \approx \Delta t$ $\qquad$ $\Delta r \approx \Delta c$

inkrimpen ruimte word
Tijd vertraging voor
een absolute lichtsnelheid.

Licht variabel snelheid afkanken
van de Meting van afstand
Voor de absolute tejd

$X(R)$ ——————— $M(X(R))$

$$\sqrt{1-v^2/c^2} = \beta$$

$$\gamma = \frac{1}{\sqrt{1-\frac{v^2}{c^2}}}$$

$$\boxed{\nabla^2 E_x = \mu\varepsilon \frac{\partial^2 E_x}{\partial t^2}}$$

$$\frac{\partial^2 E_x}{\partial z^2} = \mu\varepsilon \frac{\partial^2 E_x}{\partial t^2}$$

		speciale Relativiteit	generale Relativiteit	generale objectiviteit
Lengte	L (m)	$1/\gamma$	$1/\gamma$	$1/\gamma$
oppervlakte	A (m^2)	$1/\gamma$	$1/\gamma^2$	$1/\gamma^2$
Volume	V (m^3)	$1/\gamma$	$1/\gamma^3$	$1/\gamma^3$
tijd	t (Sec)	$1/\gamma$	$1/\gamma$	Const
Snelheden $v = \frac{\text{Afstand}}{\text{tijd}}$	V ($\frac{m}{s}$)	Const	Const	$1/\gamma$
	C ($\frac{m}{s}$)	Const	const	$1/\gamma$
Materiele Const	ε_0 ($\frac{As}{Vm}$)	const	const	γ
	μ_0 ($\frac{Vs}{Am}$)	const	const	γ
Relativistische massa	M (Kg) (VAs^3/m^2)	γ	γ	γ^2
Energy	W (Vas)	γ	γ	Const
Energy dichtheid	w ($\frac{Vas}{m^3}$)	γ^2	γ^4	γ^3
E, H, veld sterkte	E ($\frac{V}{m}$)	γ	γ^2	γ
Kracht dichtheid	H ($\frac{A}{m}$)	γ	γ^2	γ
	P ($\frac{VA}{m^2}$)	γ^2	γ^4	γ^2
D, B, veld	D ($\frac{As}{m^2}$)	γ	γ^2	γ^2
Kracht	B ($\frac{Vs}{m^2}$)	γ	γ^2	γ^2
	P ($\frac{V}{A}$)	γ	γ^2	Const

Fundementele Veld formule

$$-c^2 \,\mathrm{Rot}\,\mathrm{Rot}\,B = \frac{\partial^2 B}{\partial t^2} + \frac{1}{t_1}\frac{\partial B}{\partial t} + \frac{1}{t_2}\frac{\partial B}{\partial t} + \frac{B}{t_1 t_2}$$

$$-c^2\, \nabla \times \nabla \times E = \frac{\partial^2 E}{\partial t^2} + \frac{1}{t_1}\frac{\partial E}{\partial t} + \frac{1}{t_2}\frac{\partial E}{\partial t} + \frac{E}{t_1 t_2}$$

geen ~~lading~~ geleiding in Lucht $\sigma = 0$

geen lading $J = \sigma E$ $\quad \frac{\sigma}{\varepsilon_0} = 1/t_1 = 0$

$J = -V \cdot \varepsilon \cdot \mathrm{div} E = 0$

$$\Delta E = \mathrm{grad}\ \mathrm{div}\, E - \mathrm{rot}\,\mathrm{rot}\, E = -\mathrm{rot}\,\mathrm{rot}\, E$$

$$c^2 \cdot \Delta E = \frac{\partial^2 E}{\partial t^2} + \frac{1}{t_2}\frac{\partial E}{\partial t}$$

golf word Vortex

R = radius

Wervel snelheid $c = \omega \cdot R$

Hoeksnelheid $\omega = \frac{1}{t_2} = \frac{c}{R}$

de Vortex gaat als

Vortex stretch

$$V(x(t)) = \frac{dx}{dt}$$ als

Longitudal wave in richting

$$\Delta E = \frac{\partial^2 E}{\partial x^2}$$

$$\frac{\partial E}{\partial t} = \left(\frac{\partial E}{\partial x}\right) \cdot \left(\frac{\partial x}{\partial t}\right) = v \frac{\partial E}{\partial x}$$

$$\frac{\partial^2 E}{\partial t^2} = v^2 \left(\frac{\partial^2 E}{\partial x^2}\right) \qquad \frac{\partial v}{\partial t} = 0 \text{ geen acceleratie}$$

$$c^2 \frac{\partial^2 E}{\partial \cancel{x}^2} = v^2 \left(\frac{\partial^2 E}{\partial x^2}\right) + v \cdot (c/r) \cdot \frac{\partial E}{\partial \cancel{x}}$$

$$\frac{\partial E}{\partial x} = \left(\frac{1}{R}\right) \cdot E$$

$$\frac{\partial^2 E}{\partial x^2} = \left(\frac{1}{R^2}\right) \cdot E$$

$$E = \Psi e^{x/r}$$

$$\left(\frac{c^2}{R^2}\right) \cdot E =$$

$$\left(\frac{v^2}{R^2}\right) \cdot E - (v \cdot c/R^2) \cdot E$$

$$c^2 = v^2 - v \cdot c$$

Veld Vector $\Delta\psi\cdot c^2 = \frac{\partial^2\psi}{\partial t^2} + \left(\frac{1}{t_1}\right)\cdot\frac{\partial\psi}{\partial t} + \left(\frac{1}{t_2}\right)\frac{\partial\psi}{\partial t} + \frac{\psi}{t_1 t_2}$

$\psi = E, H, j, B$ of D $\quad t_1 = \frac{\varepsilon}{\sigma}$ $\quad t_2 = \mu\cdot\sigma$

eliptisch potentie, stationair: $t \to \infty$ $\quad \frac{\partial}{\partial t} = 0$

$$\Delta\psi\cdot c^2 = \frac{\psi}{t_1 t_2}$$

Hyperbolic golf

$$\Delta\psi\cdot c^2 = \frac{\partial^2\psi}{\partial t^2}$$

Parabolische Vortex

$$\Delta\psi\cdot c^2 = \frac{1}{t}\cdot\frac{\partial\psi}{\partial t}$$

grens geen geleiding Vacuum

$\sigma = 0$ $\quad \frac{1}{t_1} = \sigma/\varepsilon_0 = 0$

$$\Delta\psi\cdot c^2 = \frac{\partial^2\psi}{\partial t} + \left(\frac{1}{t_2}\right)\frac{\partial\psi}{\partial t}$$

Remmen door potentiele Vortex

$$\Delta\psi\cdot c^2 = \frac{\partial^2\psi}{\partial t^2} + \left(\frac{1}{t_1}\right)\frac{\partial\psi}{\partial t}$$

$\boxed{\frac{1}{\sigma} = 0 \quad \frac{1}{t_2} = 0 \text{ (Supergeleider)}}$

Remmen door Lading diffusie

$$\Delta\psi\cdot c^2 = \frac{1}{t}\cdot\frac{\partial\psi}{\partial t} + \frac{\psi}{t_1 t_2}$$

1 Ampere $\quad Rot\,H = j + \frac{\partial D}{\partial t}$

$$j = \sigma \cdot E$$
$$D = \varepsilon \cdot E$$

$$\tau_1 = \frac{\varepsilon}{\sigma}$$

$$Rot\,H = \varepsilon \cdot \left(\frac{E}{\tau_1} + \frac{\partial E}{\partial t}\right)$$

2 Faraday $\quad -Rot\,E = \frac{B}{\tau_2} + \frac{\partial B}{\partial t}$

$$B = \mu \cdot H$$

$$-Rot\,E = \mu \cdot \left(\frac{H}{\tau_2} + \frac{\partial H}{\partial t}\right)$$

$$-Rot\,Rot\,E = \mu \cdot \left(\frac{1}{\tau_2}\right) \cdot Rot\,H + \mu \cdot \frac{\partial\, Rot\,H}{\partial t}$$

$$-Rot\,Rot\,E = \mu \cdot \varepsilon \cdot \left(\frac{E}{\tau_1 \tau_2} + \left(\frac{1}{\tau_2}\right) \cdot \frac{\partial E}{\partial t} + \frac{1}{\tau_1} \cdot \frac{\partial E}{\partial t} + \frac{\partial^2 E}{\partial t^2}\right)$$

$$-Rot\,Rot\,E = \Delta E - grad\,div\,E = \Delta E$$

als $div\,E = 0$

dan $\mu \cdot \varepsilon = \frac{1}{c^2}$

Quantum Mechanics

Langevin diamagnetism

een Veld meth intensiteit B op een electron met e lading en m massa geeft de Larmor Precise met frequentie

$$\omega = \frac{eB}{2m}$$

de hoeveelheid omwentelingen per tijd = $\frac{\omega}{2\pi}$
dus de lading van atoom met Z electronen is

$$I = -\frac{Ze^2B}{4\pi m}$$

magnetisch moment $\mu = -\frac{Ze^2B}{4m}(\rho^2)$

Magnetisch moment van en lading omwenteling $\mu = I\rho^2$
By 2 Velden gelyk op Z as, gemiddelde Loop ~~opper~~ oppervlakte = $\pi(\rho)^2$

Larmor Precise

$$\underset{\text{Koppel}}{\Gamma} = \underset{\text{magnetische dipool}}{\vec{\mu}} \times \vec{B} = \gamma \underset{\text{Hoek Moment}}{\vec{J}} \times \underset{\text{Extern Veld}}{\vec{B}}$$

Larmor frequentie

$$\omega = -\gamma B$$

$$\gamma = \frac{-e g}{2M}$$ g factor meestal 1

gyromagnetische Ratio

Kirchoff & Weber

de c van hun is $\sqrt{2}c = (\mu_0 \varepsilon_0)^{-\frac{1}{2}}$

onze c is de Ratio van ElectroStatic & ElectroMagnetic

$$\sqrt{2}c = \frac{\sqrt{2}c}{\sqrt{\mu_0 \varepsilon_0}}$$

$$\nabla \cdot \vec{J} = -\frac{\partial \rho}{\partial t}$$

$$\nabla^2 \phi = -4\pi\rho$$

$$N(\lambda)\, d(\lambda) = \frac{8\pi V_{olume}}{\lambda^4}\, d\lambda$$

$$\vec{F}_{\alpha\beta} = \frac{\partial \bar{A}_\beta}{\partial \bar{x}^\alpha} - \frac{\partial \bar{A}_\alpha}{\partial \bar{x}^\beta}$$

$$= \frac{\partial}{\partial \bar{x}^\alpha}\left(\frac{\partial x^\gamma}{\partial \bar{x}^\beta} A_\gamma\right) - \frac{\partial}{\partial \bar{x}^\beta}\left(\frac{\partial x^\delta}{\bar{x}^\alpha} A_\delta\right)$$

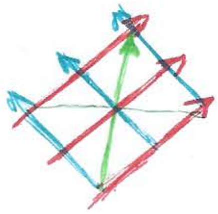
$$= \frac{\partial^2 x^\gamma}{\partial \bar{x}^\alpha \partial \bar{x}^\beta} A_\gamma + \frac{\partial x^\gamma}{\partial \bar{x}^\beta}\frac{\partial A_\gamma}{\partial \bar{x}^\alpha} - \frac{\partial^2 x^\delta}{\partial \bar{x}^\beta \partial \bar{x}^\alpha} A_\delta - \frac{\partial x^\delta}{\partial \bar{x}^\alpha}\frac{\partial A_\delta}{\partial \bar{x}^\beta}$$

$$= \frac{\partial x^\gamma \partial x^\delta \partial A_\gamma}{\partial \bar{x}^\beta \partial \bar{x}^\alpha \partial x^\delta} - \frac{\partial x^\delta \partial x^\gamma \partial A_\delta}{\partial \bar{x}^\alpha \partial \bar{x}^\beta \partial x^\gamma}$$

$$= \frac{\partial x^\delta}{\partial \bar{x}^\alpha}\frac{\partial x^\gamma}{\partial \bar{x}^\beta}\left(\frac{\partial A_\gamma}{\partial x^\delta} - \frac{\partial A_\delta}{\delta x^\gamma}\right)$$

$$\vec{F}_{\alpha\beta} = \frac{\partial x^\delta}{\partial \bar{x}^\alpha}\frac{\partial x^\gamma}{\partial \bar{x}^\beta} F_{\delta\gamma}$$

Stroom



$\frac{Q}{\Psi} = \Phi$ Magnetische inductie

$\Phi \cdot \Psi = Q$ elec + diëlec = Kwanta

$\frac{\Phi}{A} =$ Magnetische dichtheid

$\frac{Q}{A^2} =$ dichtheid electrificatie $\rightarrow cm^4$

$\frac{\Psi}{A} =$ electrische dichtheid

$\frac{Q}{T} = W_{arbeid}$ $\frac{\Phi}{T} = E_{volt}$ $\frac{\Psi}{T} = I_{amp}$

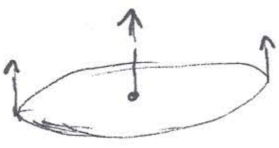
$\frac{E_{volt}}{I_{amp}} = Z_{ohm}$ $\frac{I_{amp}}{E_{volt}} = Y_{ziemens}$

$\frac{Q}{T^2} = P_{watt}$ $\frac{\Phi_{mag}}{I_{amp}} = L_{inductie}$ $\frac{\Psi_{diëlec}}{E_{volt}} = C_{capaciteit}$

$\frac{L_{inductie}}{T} = R_{ohm}$ $\frac{C_{capacit}}{T} = G_{conductie}$

$L \cdot C = T^2$ $\sqrt[2]{LC} = T = f^{-1}$

Bij diëlectriciteit past er meer energie als het dichter op elkaar
Bij Magnetisme zit meer energie in grotere afstanden



Electrice Engineering

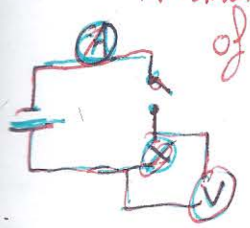
Permanent

↓

Amp & Volt = Vaste Waarde

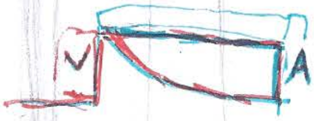
↓

A V=Max of AV=0



Transient

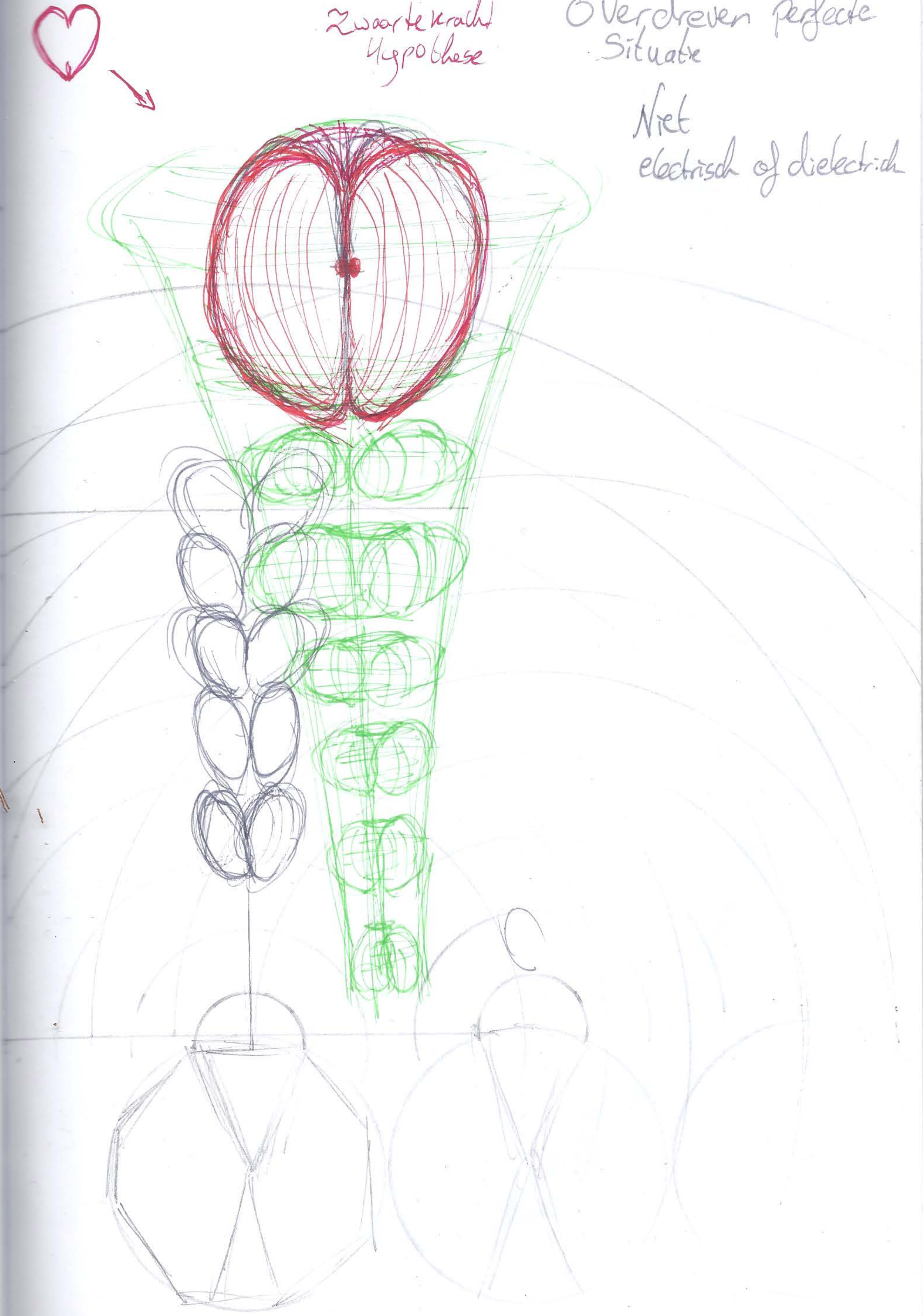
↓

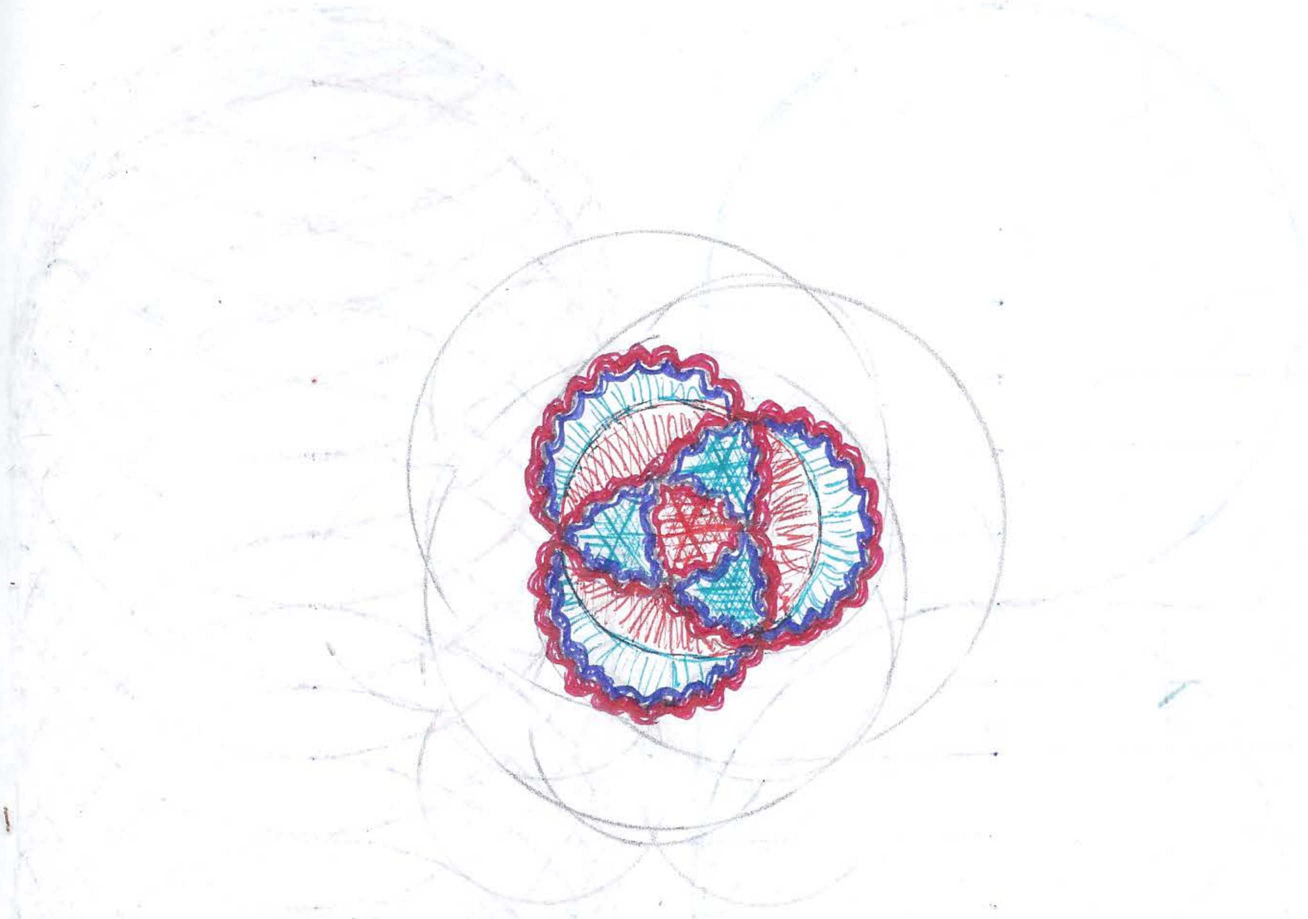


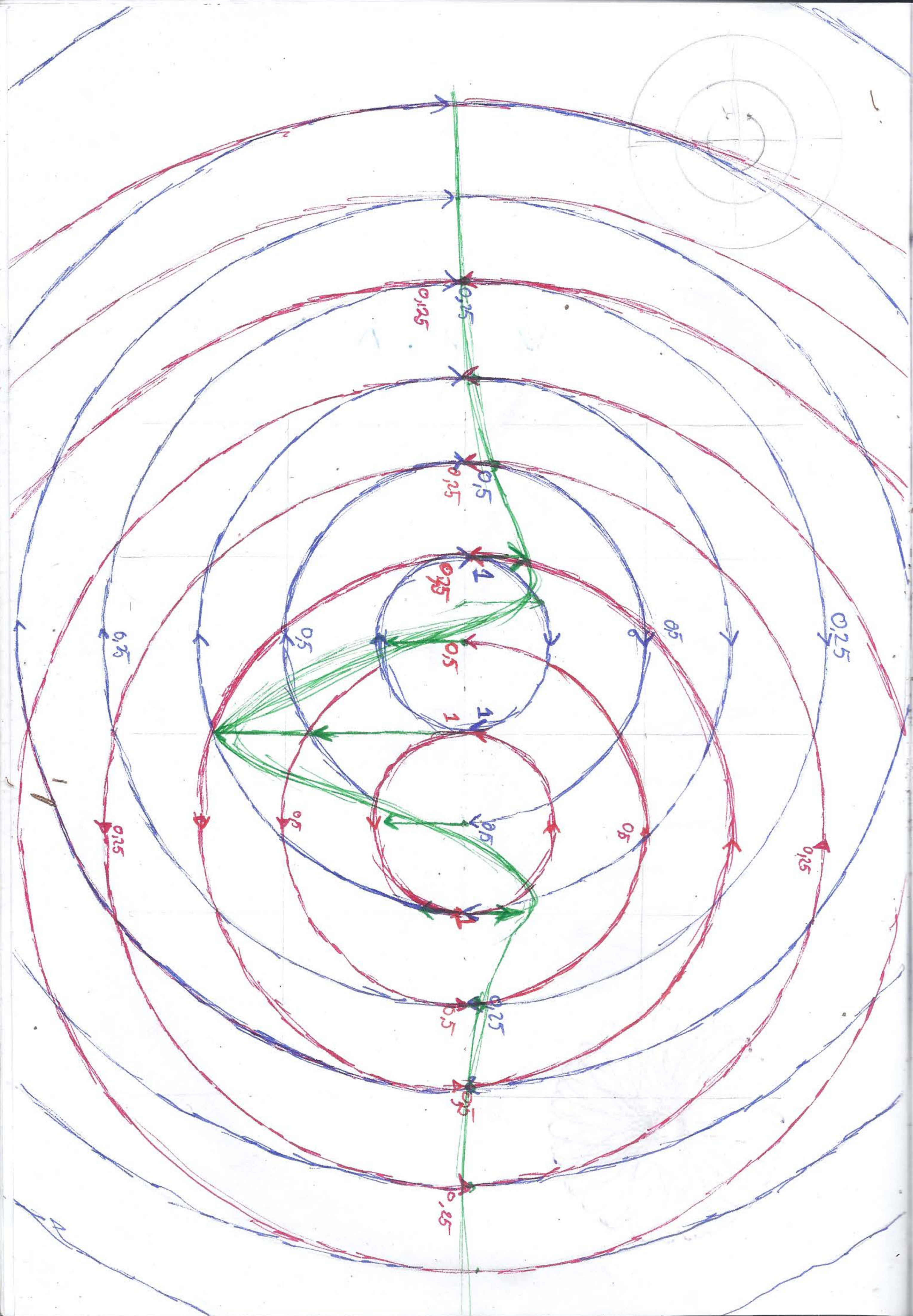
Zwaartekracht
Hypothese

O Verdreven perfecte
Situatie

Niet
electrisch of dielectrich

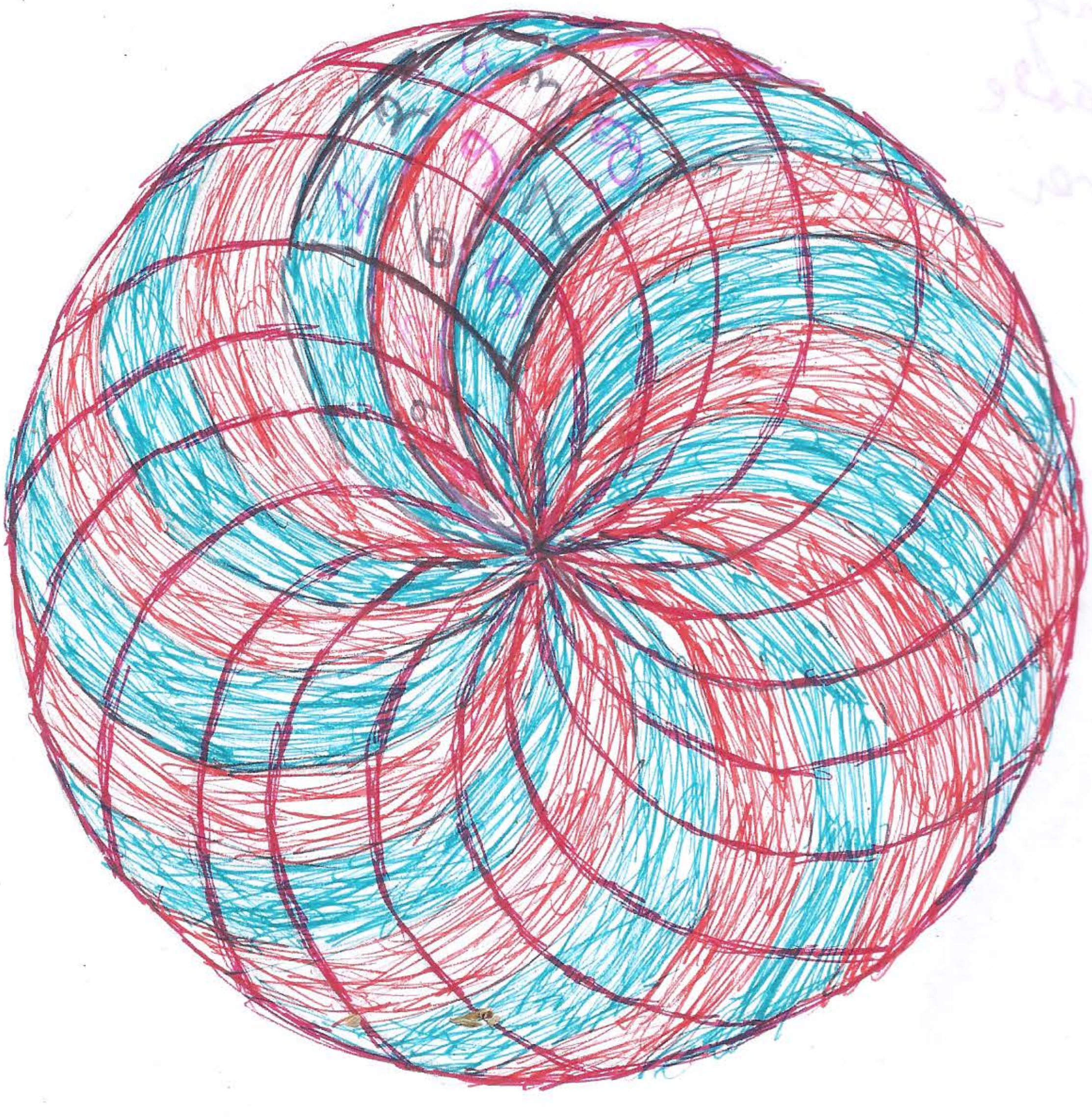


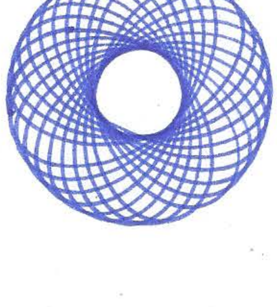




0,125
0,25
0,5
1
0,5
1
0,25
0,5
0,25
0,125

Vortex Torus in Balans





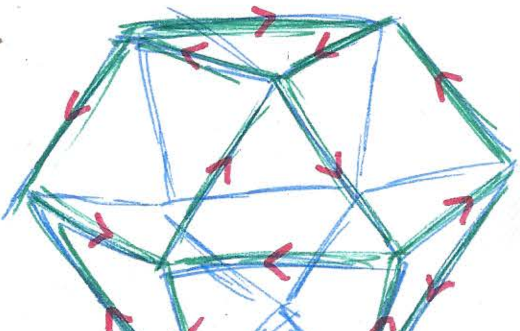
Vector Equalibrion

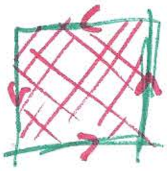
Nobele Elementen

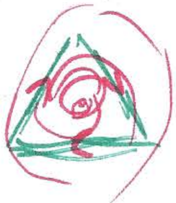
Hebben 8 electronen buiten

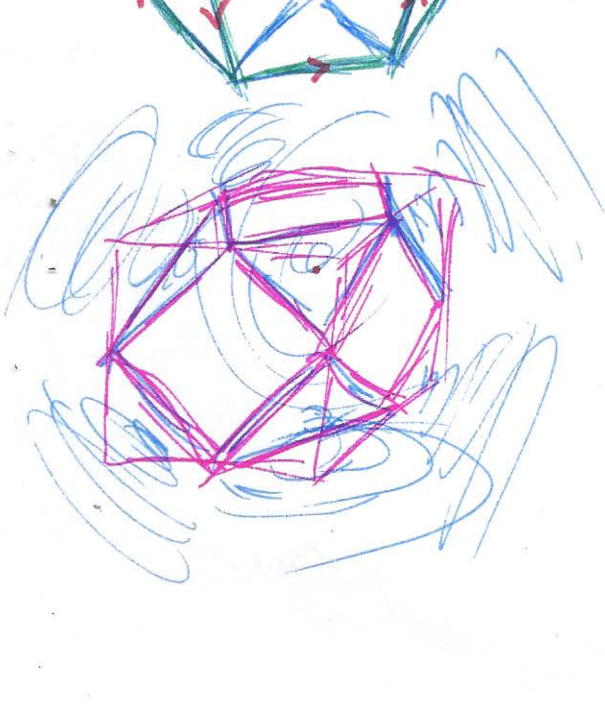
Neon	2, 8
Argon	2, 8, 8
Crypton	2, 8, 18, 8
Xenon	2, 8, 18, 18, 8
Radon	2, 8, 18, 32, 18, 8

2x 1^2 2^2 3^2 4^2 3^2 2^2



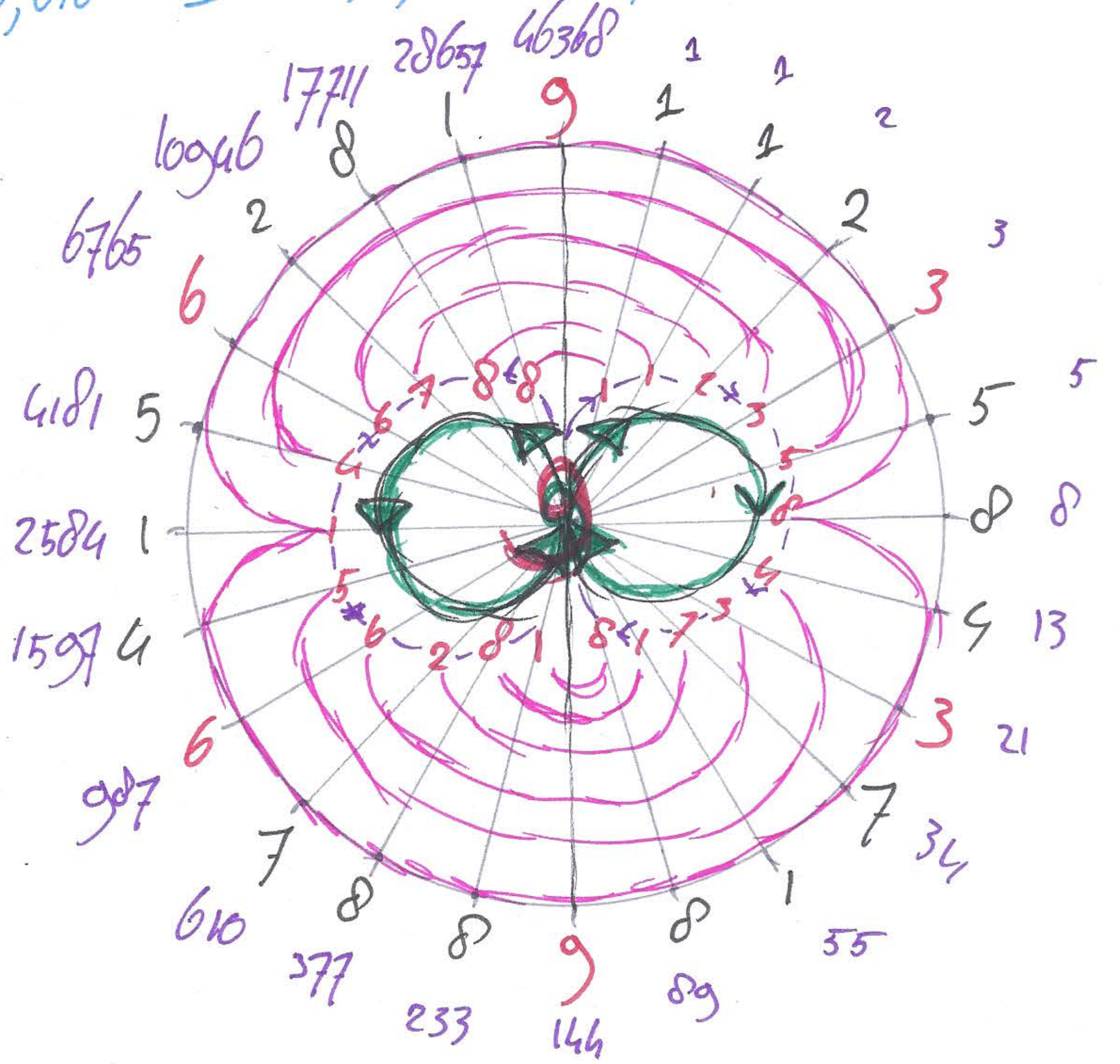
6×  = Vast

8×  = Vortex



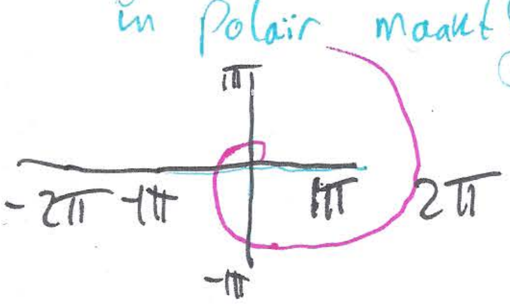
Fibonacci 1,618033980

0,618 → 1 → 1,618 → 2,618



$$\psi = \frac{1+\sqrt{5}}{2}$$

spiraal van Archimedes plotten in Polair maakt Fibonacci



Foton Electron Kans

$$\overset{\text{foton}}{\omega R} = \overset{\text{Electron}}{\omega R}$$

$$2\pi f R = \sqrt{\frac{K_e}{M_e}}\, R_c$$

$$2\pi f R = \sqrt{\frac{F_{max}}{M_e N R_c}}\,(N R_c)$$

$$R = \sqrt{\frac{F_{max}}{M_e N R_c}} \left(\frac{N R_c}{2\pi f}\right)$$

$$R^2 = \left(\frac{F_{max}}{M_e N R_c}\right)\left(\frac{N^2 R_c^2}{4\pi^2 f^2}\right)$$

$$R^2 = \frac{F_{max} N R_c^2}{2\pi C_e M_e f}$$

$$R^2 = \frac{4\pi F_{max} R_c^2}{C_e} \quad \frac{N}{8\pi^3 M_e f}$$

$$R^2 = \frac{N c^2 R_c}{4\pi C_e f}$$

$$R^2 = \frac{N h}{8\pi^2 M_e f} = \frac{N c^2 R_c}{4\pi C_e f} = \text{als } N=1,\ R = a_0$$

$$= \frac{N \mathcal{F}_{max} R_c}{4\pi^2 f^2 M_e}$$

$$M_e R_c = 2 \mathcal{F}_{max} C$$

$$G = \frac{C_e c^3 t_p^2}{R_c M_e} \qquad t_p = \frac{\lambda_e C_e t_p}{2\pi R_c}$$

$$\text{gem. } E_{kin} = \frac{3}{2} K T_{emp}$$

$$G = \frac{C_e (c^2 t_p^2) c^3}{2 \mathcal{F}_{max} R_c^2}$$

$$G = \frac{\alpha \mathcal{F}_{max} (c t_p)^2}{M_e^2} \qquad G = \frac{1}{2} \frac{C_e t_p^2}{\mathcal{F}_{max}}$$

$$a_0 = h \cdot \frac{c^2}{8\pi F_{max} C_e R_c} = \frac{h}{4\pi m_e C_e} = \frac{\alpha}{4\pi R_\infty}$$

$$h = 4\pi m_e C_e a_0 = \frac{4\pi F_{max} R_c^2}{C_e}$$

$$m_e = \frac{2 F_{max} R_c}{c^2}$$

$$R_{schwarz} = \frac{2GM}{c^2}$$

$$R_\infty = n^2 \left(\frac{F_{max} R_c^2}{m C_e^2 Z}\right) \qquad \alpha = \frac{C_e e^2}{8\pi \varepsilon_0 R_c^2 c F_{max}}$$

$$R_e = 2R_c = \frac{e^2}{4\pi \varepsilon_0 m_e c^2} \qquad e = \sqrt{\frac{2\alpha h}{\mu_0 c}}$$

$$h c R_\infty = m_e c^2 \frac{\alpha^2}{2} = \frac{h c \alpha^2}{2\lambda_e} = \frac{h f_e \alpha^2}{2}$$

$$\frac{\hbar \omega_c}{2} \alpha^2 = \frac{\hbar^2}{2 m_e a_0^2} = \frac{e^2}{(4\pi\varepsilon_0) 2 a_0}$$

$$\alpha = \frac{C_e e^2}{8\pi \varepsilon_0 R_c^2 c F_{max}} = \left(\frac{C_e}{c R_c}\right)\left(\frac{e^2}{8\pi \varepsilon_0 F_{max} R_c}\right)$$

$$\alpha = 2B_{artini} \qquad e^2 = 16\pi F_{max} \varepsilon_0 R_c^2$$

$$\alpha = \frac{\lambda_e}{4\pi R_c} = \frac{\omega_c R_e}{c} \quad \frac{2\omega_c R_c}{c} = \frac{2C_e}{c}$$

$$q_p = \sqrt{4\pi\varepsilon_0 \hbar c} = \sqrt{2ch\varepsilon_0} = \frac{e}{\sqrt{\alpha}} \qquad l_p = \lambda_e \sqrt{\frac{\alpha_g}{2\pi}}$$

$$\alpha = \left(\frac{e}{q_p}\right)^2 \qquad \lambda_e = \frac{h}{m_e c}$$

$$\alpha_g = \left(\frac{m_e}{m_p}\right)^2 = \left(T_p \omega_c\right)^2 = \frac{G m_e^2}{\hbar c} = \frac{T_p^2 K_e}{m_e} = T_p^2 \frac{F_{max}}{a_0 m_e}$$

$$= \frac{C_e^2 t_p^2}{R_c^2}$$

$$E = mc^2\left[\frac{1}{\sqrt{1-v^2/c^2}} - 1\right] \qquad K = \frac{F_{max}}{x} \qquad E = \frac{Q^2}{4\varepsilon_0 C_e} f$$

$$K = \frac{2\pi}{\lambda}$$

$$E = \frac{1}{2} K x^2$$

$$E = \frac{2Q^2}{4\pi\varepsilon_0 x} \qquad E = 2F_{max} R_c \qquad \lambda = \frac{h}{mc} \qquad c = \frac{1}{\sqrt{\varepsilon_0 \mu_0}} = \left(\varepsilon_0 \mu_0\right)^{-\frac{1}{2}}$$

$$\omega_0 = \sqrt{\frac{K}{m}} \qquad \lambda = \frac{h}{p}$$

$$\omega = 2\pi f \qquad W = \vec{F} \times \vec{x}$$

$$h = 2\pi\hbar \qquad T_p = \sqrt{\frac{\hbar G}{c^5}}$$

$$v = f \cdot \lambda \qquad l_p = \sqrt{\frac{\hbar G}{c^3}}$$

$$m_p = \sqrt{\frac{\hbar c}{G}}$$

$$\alpha = \frac{2C_e}{c} \qquad f_e = \frac{C_e}{2\pi R_c} = \frac{m_e c^2}{h}$$

$$C_e = \omega_c R_c$$

$$a_0 = \frac{c^2 R_c}{2 C_e^2} = \frac{F_{max} R_c^2}{m_e C_e^2} = \frac{4\pi\varepsilon_0 \hbar^2}{m_e e^2} = \frac{\hbar}{m_e c \alpha}$$

$$\mu = \frac{m_1 m_2}{m_1 + m_2} \qquad K = m\omega^2 \qquad \omega = mg \qquad F = -m\omega^2 x$$

$$a = -\omega^2 x = -4\pi^2 f^2 x$$

$$R_\infty = \frac{m_e e^4}{8\varepsilon_0^2 h^3 c} \qquad \frac{1}{\lambda} = R_\infty Z^2 \left(\frac{1}{n_1^2} - \frac{1}{n_2^2}\right)$$

$$R_\infty = \frac{m_e c \alpha}{2h} = \frac{C_e^3}{\pi R_c c^3} = \frac{\alpha}{4\pi a_0} = \frac{\alpha^2}{2\lambda_e} = \frac{\alpha^2 m_e c}{4\pi\hbar}$$

$$P = mc \qquad \lambda = \frac{h}{p}$$

$$E = pc$$

$$E = \frac{mc^2}{2} = \frac{p^2}{2m} \qquad \omega = \frac{E_t}{\hbar}$$

$$e^{i\theta} = \cos\theta + i\sin\theta$$

$$\psi = A\cos\left(\frac{2\pi r}{\lambda} - \omega t\right)$$

$$i\hbar\frac{\partial\psi(x,y,z,t)}{\partial t} = \left(-\frac{\hbar^2}{2M}\nabla^2 + V(xyz)\right)\psi(xyzt)$$

$$\nabla^2 = \frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2} + \frac{\partial^2}{\partial z^2}$$

$$i\hbar\frac{\partial\psi}{\partial t} = \hat{H}\psi$$

$$Bad = \frac{2}{\sqrt{x}}$$

Tau Compton	$\lambda_{c\tau}$	$6,97787 \cdot 10^{-16}$ m
Tau Mass	m_τ	$3,16747 \cdot 10^{-29}$ Kg
Relatieve Gravity	E	$2,07650432 \cdot 10^{-43}$
Fibbonacci	φ	$1,618033988$
Deuterium Mass	m_d	$3,34358348 \cdot 10^{-27}$ Kg
Tritrion Mass	m_t	$5,00735630 \cdot 10^{-27}$ Kg
helium Mass	m_h	$5,0064123 4 \cdot 10^{-27}$ Kg
Redaceerde Planck Const	$\hbar$	$1,054571726 \cdot 10^{-34}$ Js
Proton Compton Golflengte	λ_{cp}	$1,32140985623 \cdot 10^{-15}$ m
Schwarzschild Electron	R_{se}	$1,3528615 \cdot 10^{-57}$ m
Schwarzschild Proton	R_{sp}	$2,48406025 \cdot 10^{-54}$ m
Schwarzschild Neutron	R_{sN}	$2,48748434 \cdot 10^{-54}$ m
Bartini const	B	$274,074996$
Dirac Large Number	L_n	
Faraday constante	F	$9,648534 \cdot 10^{4}$ C mol^{-1}
Gas Constante	R	$8,314472$ J K^{-1} mol^{-1}
Impedantie Vacuum	Z_0	$376,7303\ \Omega$
Loschmidt constante	n_0	$2,6867775 \cdot 10^{25}$ m^{-3}
Mag Flux constante	Φ_0	$2,067833758 \cdot 10^{-15}$ Wb
Unified Atomic Mass Dalton	D_a	$1,660538921 \cdot 10^{-27}$ Kg
Kirchoff & Weber	c	$24486,4231$

Lichtsnelheid	c	299792458	
Kwantum frequentie	C_e	1093845,63	
constant Planck	h	$6{,}62606957 \cdot 10^{-34}$	J/s
Electrische Veld const	ε_0	$8{,}854187817 \cdot 10^{-12}$	F/m
Magnetische Veld const	μ	$4\pi \cdot 10^{-7}$	H/m
Elementaire Lading	e	$1{,}602176565 \cdot 10^{-19}$	C
Fijn Structuur Const	α	0,0072973526	
Bohr ground state	a_0	$5{,}2917721092 \cdot 10^{-11}$	m
coulomb Barriere	R_c	$1{,}40897017 \cdot 10^{-15}$	m
Max Force	F_{max}	29,053507	N
Planck tijd	t_P	$5{,}39106 \cdot 10^{-44}$	Sec
Planck lengte	l_P	$1{,}616199 \cdot 10^{-35}$	m
Planck Lading	q_P	$1{,}875545 \cdot 10^{-18}$	C
Rydberg Const	R_∞	$1{,}0973731568 \cdot 10^{-7}$	m
Gravitatie const	G	$6{,}67384 \cdot 10^{-11}$	m/kg/sec
Gravitatie koppel const	α_G	$1{,}7518 \cdot 10^{-45}$	
Planck Massa	m_P	$2{,}17651 \cdot 10^{-8}$	Kg
compton frequentie	f_c	$1{,}235589965 \cdot 10^{20}$	Hz
compton omwenteling	ω_c	$7{,}76344071 \cdot 10^{20}$	Hz
compton golf lengte	λ_c	$2{,}42631024 \cdot 10^{-12}$	m
Boltzman const	K	$1{,}3806488 \cdot 10^{-23}$	$J K^{-1}$
Electron Mass	m_e	$9{,}10938291 \cdot 10^{-31}$	Kg
Proton Mass	m_p	$1{,}672621777 \cdot 10^{-27}$	Kg
Neutron Mass	m_n	$1{,}674927351 \cdot 10^{-27}$	Kg
Muon Compton	$\lambda_{c\mu}$	$1{,}173444103 \cdot 10^{-14}$	m
Muon Mass	m_μ	$1{,}883531475 \cdot 10^{-28}$	kg