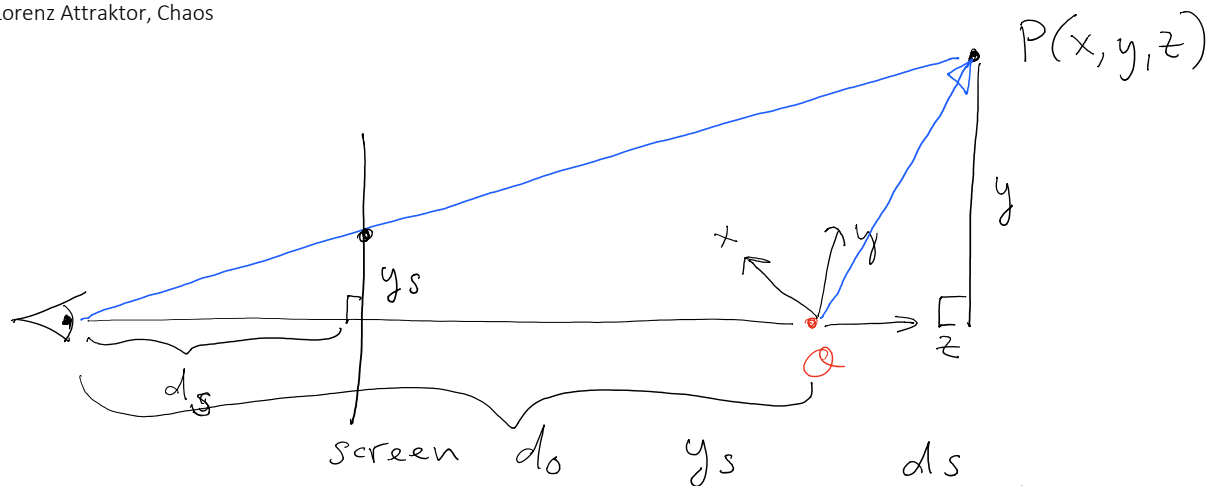
Spin 1 - 3-D Grafik, Lorenz Attraktor, Chaos

Monday, April 11, 2016 11:27 AM



$$\frac{y_s}{y} = \frac{d_s}{d_0+z}$$

$$\begin{pmatrix} x_s \\ y_s \end{pmatrix} = \frac{d_s}{d_0+z} \begin{pmatrix} x \\ y \end{pmatrix} \leftarrow$$

Rotieren des Objekts

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} C & 0 & S \\ 0 & 1 & 0 \\ -S & 0 & C \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix}$$

wo $C = \cos\Theta$ Θ ist eine Rotation
$S = \sin\Theta$ um die y-Achse.

Um x

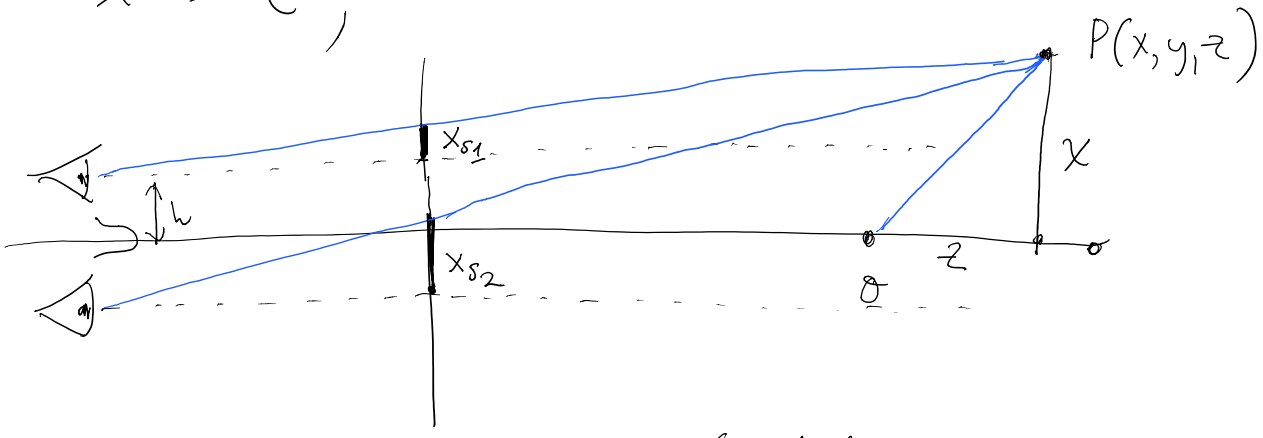
$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & C & S \\ 0 & -S & C \end{pmatrix}$$

um z

$$\begin{pmatrix} C & S & 0 \\ -S & C & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

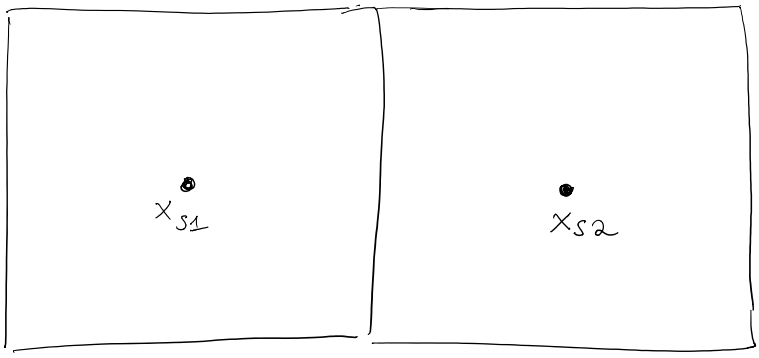
```
/* y bleibt unverändert */
C = cos Θ
S = sin Θ
t = x*C + z*S;
z = z*C - x*S;
```

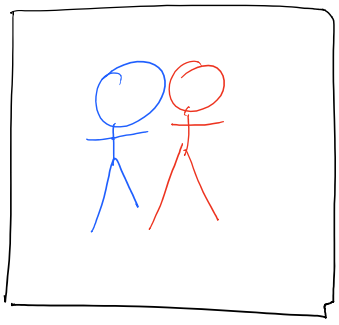
$x = t;$



$$\begin{pmatrix} x_{s12} \\ y_s \end{pmatrix} = \frac{d_s}{d_o + z} \begin{pmatrix} x \pm h \\ y \end{pmatrix}$$

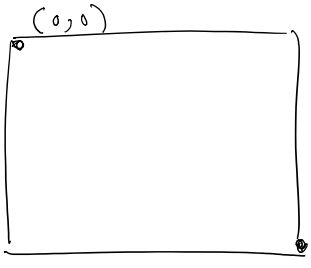
Zwei Screens





Polarisation

Von $x_s, y_s \longrightarrow$ pixel index ?



(w-1, h-1)

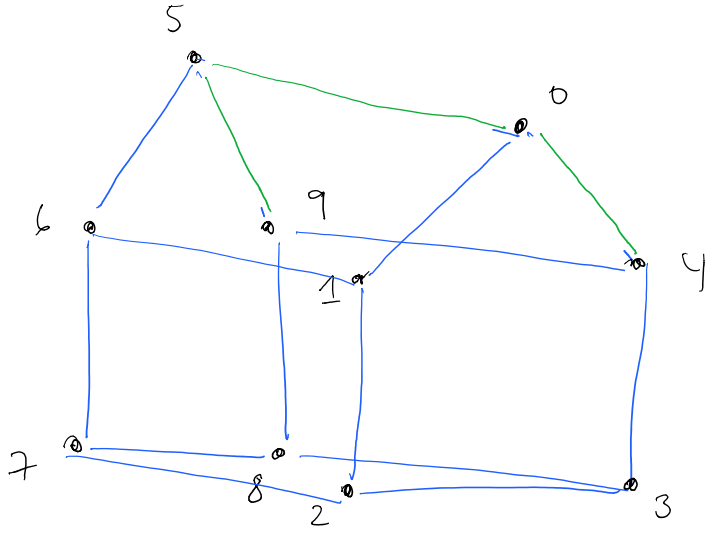
$$iX = (int)(x_s * S) + w/2$$

$$iy = h/2 - (int)(y_s * S)$$

Ein Test

x[]

y[]




```
for (i=0; i<4; ++i) {
  line(x[i], y[i], x[i+1], y[i+1]);
  line(x[i+5], y[i+5], x[i+6], y[i+6]);
  line(x[i], y[i], x[i+5], y[i+5]);
}
line(x[i], y[i], x[0], y[0]);
line(x[i+5], y[i+5], x[5], y[5]);
line(x[0], y[0], x[5], y[5]);
```

LORENZ ATTRAKTOR : 1962

$$\frac{dx}{dt} = -\sigma x + \sigma y \qquad \sigma = 10$$

$$\frac{dy}{dt} = Rx - y - xz \qquad B = \frac{8}{3}$$

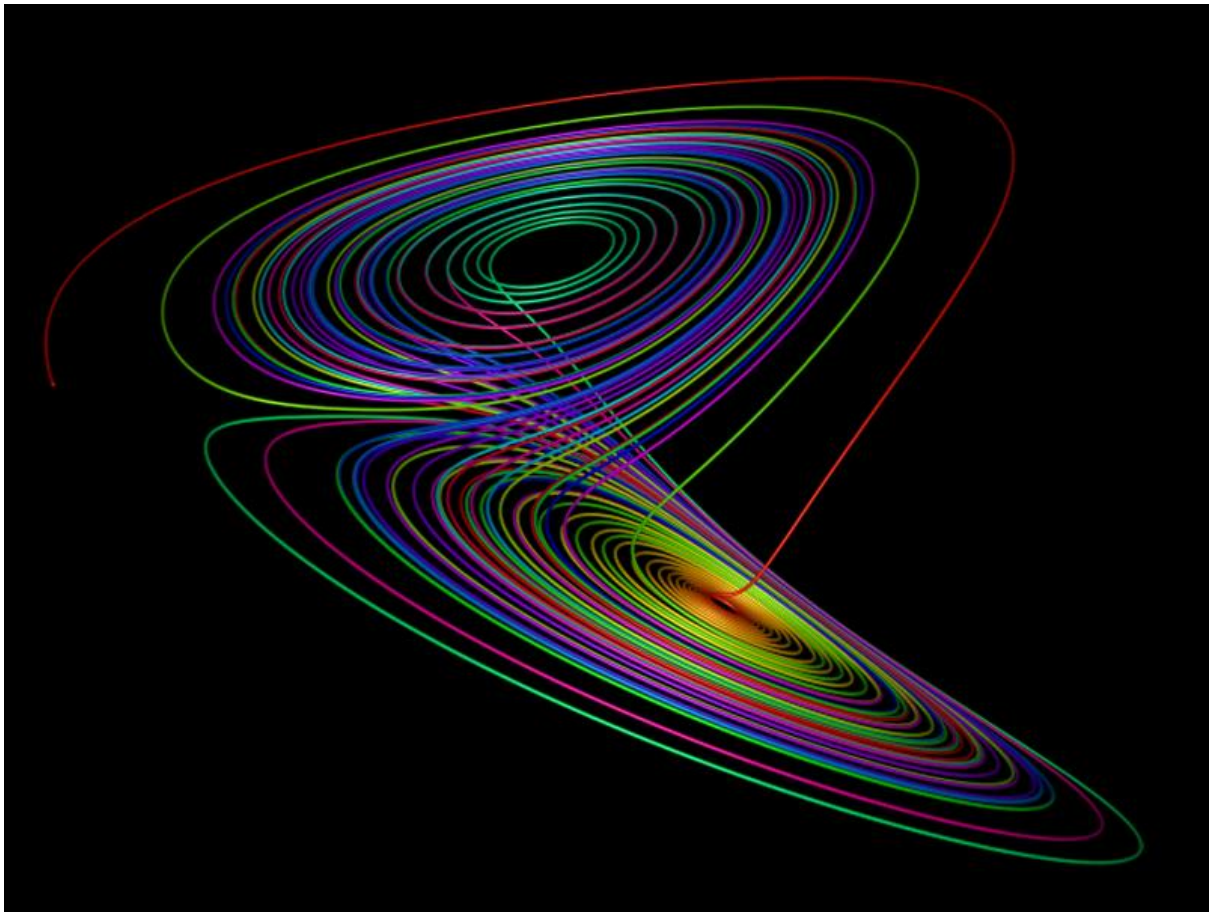
$$\frac{dy}{dt} = Rx - y - xz$$

$$\frac{dz}{dt} = -Bz + xy$$

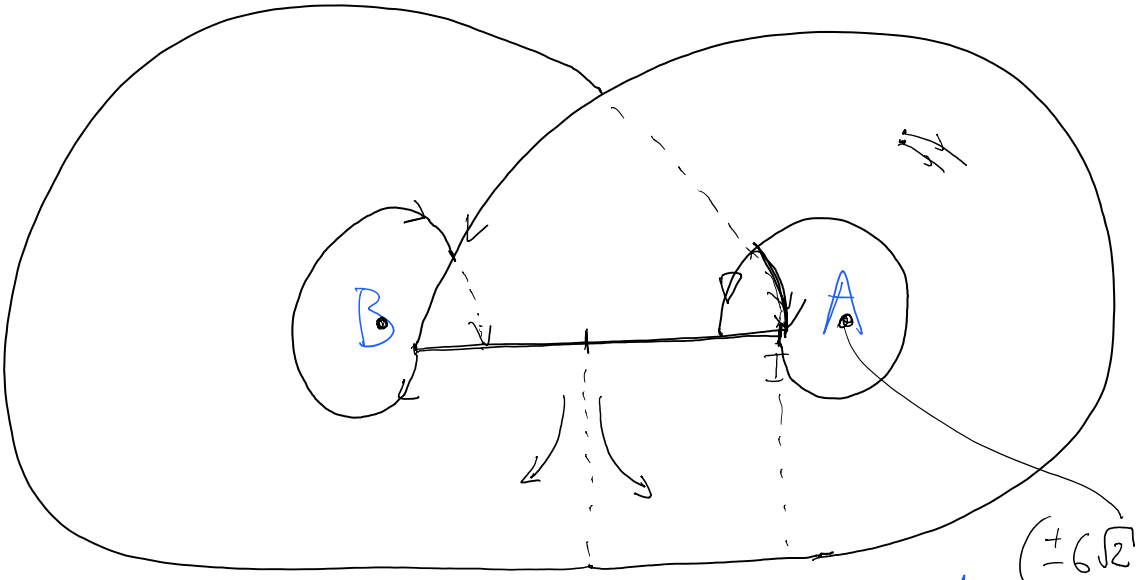
$$B = \frac{8}{3}$$

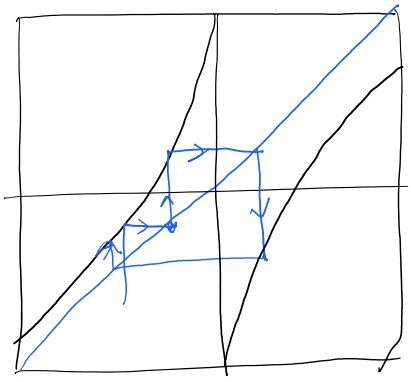
$$R = 28$$

Strange



Streach - Split - Merge





AAB

ABB

AAA ---- AB--

COLOR MAP