

Weber Fechner law according to Fechner and to Wikipedia

$$\frac{(JND)dS}{S} = \text{constant} \quad S = \text{Stimuli}$$

The Just Noticeable Difference (JND) is dS . A noticeable difference can not be written dS since dS goes to zero and then it is not noticeable.

A finite difference in S is written ΔS .

$$\frac{\Delta S(JND)}{S} = \text{constant}$$

This expression only says that there is a perception.

Fechner wrote

The addition dP to the perception P when S increases dS .

$$dP = k S^{\alpha} dS \quad \alpha = -1 \text{ gives The Fechner law}$$

All other α gives Stevens law

Integrate The Fechner law $\alpha = -1$, from S_0 to S

$$P = k \ln \frac{S}{S_0} \quad S > S_0, S_0 = \text{threshold}$$