Additive colour mixing

Principle and equipment

Principle

Demonstrate how colours can be additively mixed by projecting them onto each other.

Equipment

Position No.	Material	Order No.	Quantity
1	Demo Physics board with stand	02150-00	1
2	PHYWE Multitap transformer, DC: 2/4/6/8/10/12 V, 5 A / AC: 2/4/6/8/10/12/14 V, 5 A	13533-93	1
3	Light box 12V/20W,w.magn.base	09804-00	1
4	Light box accessories for colour mixing	09806-00	1
5	Diaphragm w. holder, magnet held	08270-10	2
6	Colour filter set, additive (red, blue, green)	09807-00	1

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Set-up and equipment

Set-up and procedure

- Attach the mirror holders (light box access) to the light box.
- Insert colour filters into the mirror holders, e.g. red and green.
- Insert a third filter (cyan) and the gate diaphragm into the opening on the lamp end of the light box.
- Place the light box onto the magnet optics panel and switch it on.
- Observe which mixed colours result from the overlapping of the three divergent, coloured light beams (Fig. 1).
- Exchange the blue and green filters and observed the mixed colours.

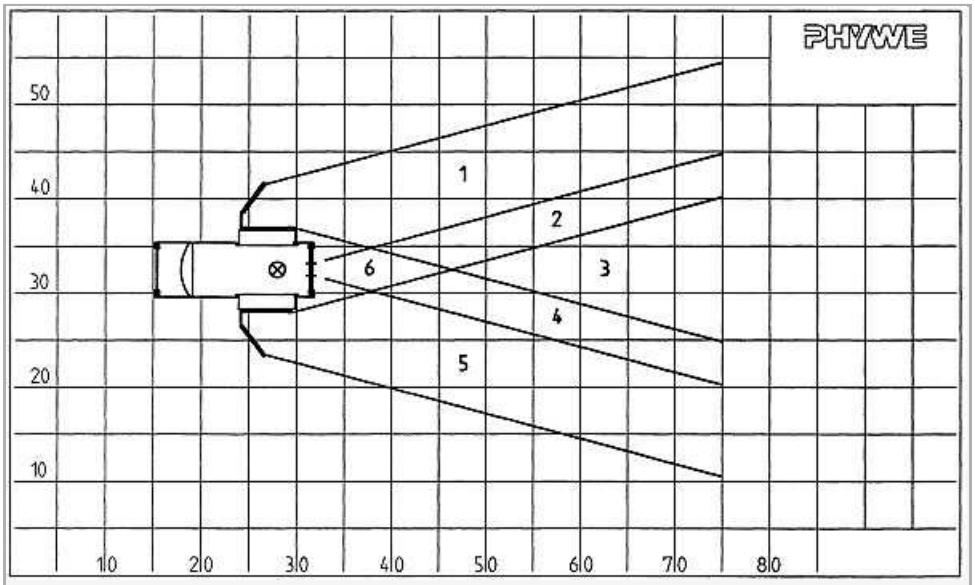

Fig. 1: 1 - Green. 2 - Cyan. 3 -White. 4 - Purple. 5 - Red. 6 - Blue.

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Observation and evaluation

Additive colour mixing of	Mixed colour
Blue and green	Cyan (Blue-green)
Blue and red	Purpur (magenta)
Green and red	Yellow
Blue, green and red	White

Remark

It is advisable to block the beams travelling upward and downward from the light box, as they are non-essential marginal effects (they have not been drawn in Fig. 1). Even without exchanging the coloured filters yellow can be demonstrated as a mixed colour of red and green about 20 mm in front of the panel.

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