Light and colour
Additive and subtractive colour mixing
Additive colour mixing - Complementary colours - Three-colour lamp

Object of the experiment

1. Determining the complementary colours by additive colour mixture

Setup

Safety note:

As the three-fold lamp becomes hot during operation, the distance between the lamp and the heat-sensitive filter should be at least 1.5 cm.

- Set the switch of the three-fold lamp so that only two lamps shine.
- Move the screen to a distance of approximately 10 - 15 cm from the lens.

Apparatus

1 Optical bench, S1 profile, 1 m	460 310
3 Clamp riders with fixing column	460 313
1 Clamp rider with clamp	460 311
1 Triple lamp, 12 V/3 x 6 W	459 045
1 Colour filter set, primary	467 95
1 Colour filter set, secondary	467 96
1 Diaphragm and slide holder, on rod	459 33
1 Lens on rod, f = + 100 mm	459 62
1 Screen, translucent	441 53
1 Transformer, 6/12 V	521 210
1 Connecting leads, 19 A, 100 cm, black, pair	501 461

Carrying out the experiment

- Switch the three-fold lamp on.
- One after another insert pairs of filters in the diaphragm and slide holder in the combinations red and cyan, green and magenta, blue and yellow.
- For each combination observe the picture on the screen, and take the colour of the area of overlap down.
- Insert arbitrary other combinations of filters in the diaphragm and slide holder, and compare the colours of the area of overlap with the results taken down previously.

Observation

Filter		Area of overlap
red	cyan	white
green	magenta	white
blue	yellow	white

Evaluation

If the additive mixture of two colours results in the colour white, the two colours are called complementary colours.

In this experiment, red and cyan, green and magenta, blue and yellow are complementary colours.

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