

## Light and colour

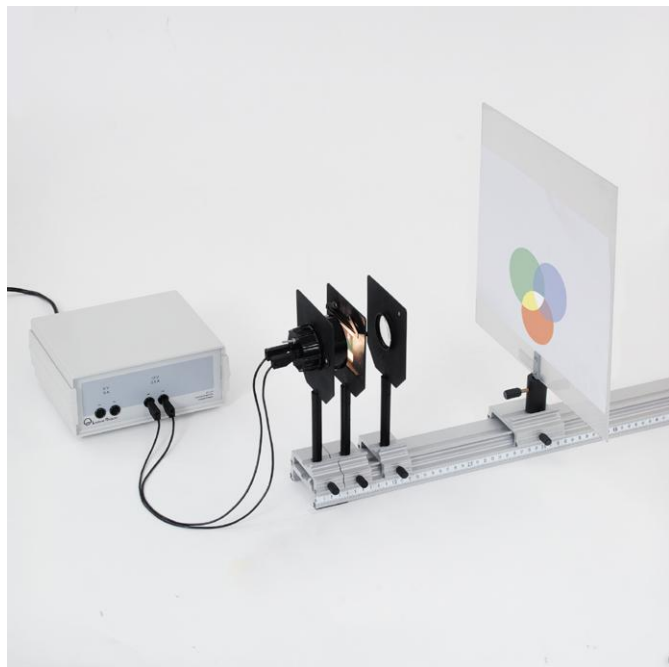
## Additive and subtractive colour mixing

## Additive colour mixing - Three-colour lamp

## Object of the experiment

1. Determining the mixed colours that arise when light of the colours red, green and blue is added

## 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 all three lamps shine simultaneously.
- Insert the three-fold filter on the side of the diaphragm and slide holder that is directed away from the lamp.
- Move the screen to a distance of approximately 10 - 15 cm from the lens.

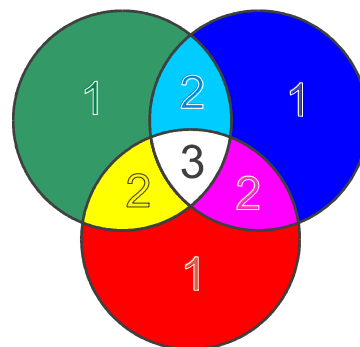
## Apparatus

1 Optical bench, S1 profile, 1 m.....	460 310
3 Clamp riders with fixed column.....	460 313
1 Clamp rider with clamp .....	460 311
1 Triple lamp, 12 V/3 x 6 W .....	459 045
1 Triple colour filter .....	467 97
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.
- Observe the picture on the screen, and take the colours of the individual areas down.

## Observation



Area	Colour*
1	red
1	green
1	blue
2	yellow
2	cyan
2	magenta
3	white

\*As the plastic filters are quite primitive, some of the colours may be slightly falsified.

## Evaluation

If light of the primary colours red, green and blue is projected on a screen so that it overlaps in pairs outside and all together in the centre, new colours arise in the areas of overlap. These colours are called mixed colours:

red + green	→ yellow
green + blue	→ cyan
blue + red	→ magenta
red + green + blue	→ white