

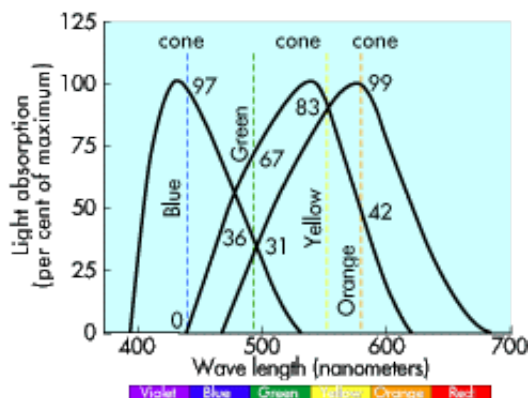
Uporabna svetlobe iz crnih teles za cloveski vid

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Zanima me koliko iz crnega telesa izsevanega elektromagnetne valovanja lahko clovesko oko uporabi za vid.

(s strani <http://health.howstuffworks.com/eye3.htm>)

Each cone cell has one of these pigments so that it is sensitive to that color. The human eye can sense almost any gradation of color when red, green and blue are mixed.



In the diagram above, the wavelengths of the three types of cones (red, green and blue) are shown. The peak absorbancy of blue - sensitive pigment is 445 nanometers, for green - sensitive pigment it is 535 nanometers, and for red - sensitive pigment it is 570 nanometers.

```
c = 2.99792458 × 108 ; (* svetlobna hitrost *)
k = 1.380658 × 10-23 ; (* Boltzmannova konstanta *)
h = 6.6260755 × 10-34 ; (* Planckova konstanta *)
s = 5.67032 × 10-8 ; (* Stefanova konstanta *)
nm = 10-9 ; (* nano meter *)

(* Planckov zakon: Porazdelitev energijskega toka po valovnih dolzinah *)
Clear[djdl];
djdl[lambda_] := 2 Pi h c2 / lambda5 / (Exp[h c / (k lambda T)] - 1);

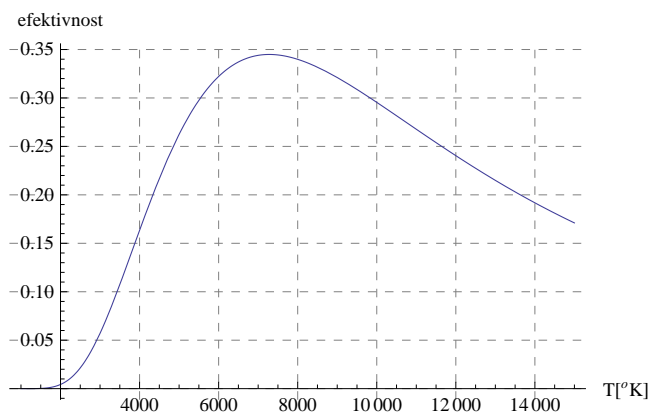
(* Priblizna absorpcijska krivulja ocesa *)
Clear[w];
w[lambda_] := UnitStep[650 nm - lambda] UnitStep[lambda - 400 nm];

(* Efektivnost *)
Clear[eff];
eff[T_] := NIntegrate[djdl[lambda] w[lambda], {lambda, 0, Infinity}];
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```

g = Plot[eff[T] / (s T^4), {T, 1000, 15 000},
  PlotRange -> All, AxesLabel -> {"T[°K]", "efektivnost"},
  GridLines -> Automatic, GridLinesStyle -> Directive[Dashed]]
Export["eff.eps", g, "EPS"];
g = .

```



Zaključek :

Po zelo grobi ocen lahko clovek vidno zazna le maksimalno 35 % vse izsevane energije. Ta maksimum se zgodi pri crnih telesih, ki so segreta do neverjetnih 7000 K. V resnici lahko vidimo se dosti manj kot se da razbrati iz prve slike, saj absorpcijska krivulja ni skatlaste oblike.