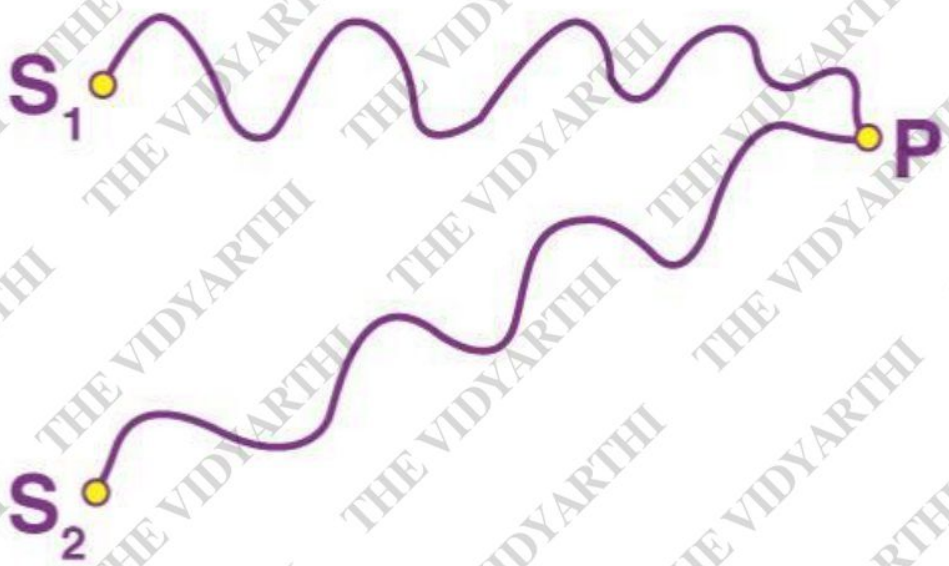
Two covalent sources of Intensity ratio α interfere for the interference pattern. Prove that-

$I_{max} - I_{min} / I_{max} + I_{min} = 2\sqrt{\alpha}/1+\alpha$

Where the symbols have the usual measuring.



Intensity of S1= I1

Intensity of S2= I2

[Intensity=KA^2]

$I1=KA1^2$

$I2=KA2^2$

$I1/I2= A1^2/A2^2=\alpha$

LHS

$=(I2+I1) - (I2-I1)/(I2+I1) + (I2-I1)$

$=(A2+A1)^2 - (A2-A1)^2/(A2+A1)^2 + (A2-A1)^2$

$=A2^2+A1^2+2A1A2-A2^2-A1^2+2A1A2/A2^2+A1^2+2A1A2 +A2^2+A1^2-2A1A2$

$=4A1A2/2(A2^2+A1^2)$

$=2A1A2/A2^2+A1^2$

Dividing the equation with $A2^2$-

$=2(A1/A2)/1+(A1^2/A2^2)$

$=2\sqrt{\alpha}/1+\alpha$

RHS