

In[6]:= **hx = h0 \* (Ap \* Fpx + Ac \* Fcx)**

Out[6]= (Ac Fcx + Ap Fpx) h0

In[7]:= **hy = h0 \* (Ap \* Fpy + Ac \* Fcy)**

Out[7]= (Ac Fcy + Ap Fpy) h0

In[8]:= **L = (1 / (2 \* pi \* sx \* sy)) \* Exp[-((dx - hx)^2 / sx^2) + ((dy - hy)^2 / sy^2)] / 2]**

Out[8]= 
$$\frac{e^{\frac{1}{2} \left( -\frac{(\text{dx} - (\text{Ac Fcx} + \text{Ap Fpx}) h_0)^2}{s_x^2} - \frac{(\text{dy} - (\text{Ac Fcy} + \text{Ap Fpy}) h_0)^2}{s_y^2} \right)}}{2 \pi s_x s_y}$$

In[9]:= **Pap = (1 / (Sqrt[2 \* Pi] \* sa)) \* Exp[-Ap^2 / (2 \* sa^2)]**

Out[9]= 
$$\frac{e^{-\frac{A_p^2}{2 s_a^2}}}{\sqrt{2 \pi} s_a}$$

In[10]:= **Pac = (1 / (Sqrt[2 \* Pi] \* sa)) \* Exp[-Ac^2 / (2 \* sa^2)]**

Out[10]= 
$$\frac{e^{-\frac{A_c^2}{2 s_a^2}}}{\sqrt{2 \pi} s_a}$$

In[11]:= **Integrate[L \* Pac \* Pap, {Ap, -Infinity, Infinity}, {Ac, -Infinity, Infinity}]**

Out[11]= ConditionalExpression[  

$$e^{-\frac{-2 \text{dx dy (Fcx Fcy + Fpx Fpy) h}_0^2 \text{sa}^2 + \text{dy}^2 (\text{Fcx}^2 \text{h}_0^2 \text{sa}^2 + \text{Fpx}^2 \text{h}_0^2 \text{sa}^2 + \text{sx}^2) + \text{dx}^2 (\text{Fcy}^2 \text{h}_0^2 \text{sa}^2 + \text{Fpy}^2 \text{h}_0^2 \text{sa}^2 + \text{sy}^2)}{2 (-2 \text{Fcx Fcy Fpx Fpy h}_0^4 \text{sa}^4 + \text{Fpy}^2 \text{h}_0^2 \text{sa}^2 \text{sx}^2 + \text{Fcy}^2 \text{h}_0^2 \text{sa}^2 (\text{Fpx}^2 \text{h}_0^2 \text{sa}^2 + \text{sx}^2) + \text{Fpx}^2 \text{h}_0^2 \text{sa}^2 \text{sy}^2 + \text{sx}^2 \text{sy}^2 + \text{Fcx}^2 \text{h}_0^2 \text{sa}^2 (\text{Fpy}^2 \text{h}_0^2 \text{sa}^2 + \text{sy}^2))}} \Bigg/$$
  

$$\left( 2 \pi \text{sa}^2 \text{sx} \sqrt{\frac{1}{\text{sa}^2} + \text{h}_0^2 \left( \frac{\text{Fcx}^2}{\text{sx}^2} + \frac{\text{Fcy}^2}{\text{sy}^2} \right)} \text{sy} \right.$$
  

$$\sqrt{\left( (-2 \text{Fcx Fcy Fpx Fpy h}_0^4 \text{sa}^4 + \text{Fpy}^2 \text{h}_0^2 \text{sa}^2 \text{sx}^2 + \text{Fcy}^2 \text{h}_0^2 \text{sa}^2 (\text{Fpx}^2 \text{h}_0^2 \text{sa}^2 + \text{sx}^2) + \right.$$
  

$$\left. \left. \text{Fpx}^2 \text{h}_0^2 \text{sa}^2 \text{sy}^2 + \text{sx}^2 \text{sy}^2 + \text{Fcx}^2 \text{h}_0^2 \text{sa}^2 (\text{Fpy}^2 \text{h}_0^2 \text{sa}^2 + \text{sy}^2) \right) \right/}$$
  

$$\left. (\text{Fcy}^2 \text{h}_0^2 \text{sa}^4 \text{sx}^2 + \text{sa}^2 (\text{Fcx}^2 \text{h}_0^2 \text{sa}^2 + \text{sx}^2) \text{sy}^2) \right) \Bigg],$$
  

$$\text{Re} \left[ \left( -2 \text{Fcx Fcy Fpx Fpy h}_0^4 \text{sa}^4 + \text{Fpy}^2 \text{h}_0^2 \text{sa}^2 \text{sx}^2 + \text{Fcy}^2 \text{h}_0^2 \text{sa}^2 (\text{Fpx}^2 \text{h}_0^2 \text{sa}^2 + \text{sx}^2) + \right. \right.$$
  

$$\left. \left. \text{Fpx}^2 \text{h}_0^2 \text{sa}^2 \text{sy}^2 + \text{sx}^2 \text{sy}^2 + \text{Fcx}^2 \text{h}_0^2 \text{sa}^2 (\text{Fpy}^2 \text{h}_0^2 \text{sa}^2 + \text{sy}^2) \right) \right/}$$
  

$$\left. (\text{Fcy}^2 \text{h}_0^2 \text{sa}^4 \text{sx}^2 + \text{sa}^2 (\text{Fcx}^2 \text{h}_0^2 \text{sa}^2 + \text{sx}^2) \text{sy}^2) \right] \geq 0 \Big]$$

In[12]:=