



$$f_{\text{об}}(z) = C_1 z + \frac{C_2 z^{-1}}{z} \quad \text{Рез. } z < 1 \text{ а жем. } \text{Рассеив.}$$

$$f_{\text{об}}(z) = z^2 \quad \text{хар. ур-е: } \lambda(\lambda-1) + \lambda - 1 = 0$$

$$\lambda^2 = 1 \quad \lambda_{1,2} = \pm 1$$

резонанса нет  $f_{\text{расн}} = az^3$

$$z^2 a \cdot 3 \cdot 2z + z a \cdot 3z^2 - az^3 = 1 \quad a = \frac{1}{8}$$

$$f = C_1 z + \frac{z^3}{8}$$

$$f|_{z=1} = -1 \quad \text{и жем. ЗК нас } f(z)$$

$$f_2 = C_1 + \frac{3}{8}z^2 \rightarrow C_1 = -\frac{3}{8} - 1 = -\frac{11}{8}$$

$$f(z) = \frac{1}{8}(z^3 - 11z)$$

$$U_{\text{расн}1} = V_1 = \frac{1}{8}(z^3 - 11z) \cos \varphi$$

$$U_{\text{расн}2} = V_2 \quad \begin{cases} \Delta V_2 = -8z^4 \cos 2\varphi \\ (V_2)_e|_{z=1} = 0 \end{cases}$$

$$\frac{\partial^2}{\partial \varphi^2} \cos 2\varphi = -4 \cos 2\varphi \rightarrow V_2 = f(z) \cos 2\varphi$$

$$f'' + \frac{1}{2}f' - \frac{4}{z^2}f = -8z^4 \Big| \cdot z^2$$

$$z^2 f'' + z f' - 4f = -8z^6$$

$$f_{\text{об}} = z^2 \quad \text{хар. ур-е: } \lambda(\lambda-1) + \lambda - 4 = 0$$

$$\lambda^2 = 4 \quad \lambda_{1,2} = \pm 2$$

резонанса нет

$f|_{z=1} = 0 \rightarrow \text{ЗК}$

$$f = C_1 z^2 + \frac{C_2^0}{z^2} + \underbrace{A z^6}_{P_0(\ln z)}$$

$$z^2 A \cdot 6 \cdot 5 z^4 + z A \cdot 6 \cdot z^5 - 4 A z^6 = -8 z^6$$

$$32 A = -8 \quad A = -\frac{1}{4}$$

$$f(z) = C_1 z^2 - \frac{z^6}{4}$$

$$f_2 = 2 C_1 z - \frac{3}{2} z^5 \quad 2 C_1 - \frac{3}{2} = 0 \quad C_2 = \frac{3}{4}$$

$$U_{\text{застр.}} = V_2 = f(z) \cos 2\varphi = \frac{1}{4} (3z^2 - z^6) \cos 2\varphi$$

$$U_{\text{застр.}} = V_1 + V_2 =$$

$$= \frac{1}{8} (z^3 - 11z) \cos \varphi + \frac{1}{4} (3z^2 - z^6) \cos 2\varphi$$

$$\textcircled{3} \quad U = U_{\text{застр.}} + V$$

$$\begin{cases} \Delta V = 0 \\ V_2|_{z=1} = -6\sqrt{3} \sin(3\varphi + \frac{\pi}{8}) \end{cases}$$

$$V_2|_{z=1} = -6\sqrt{3} \sin(3\varphi + \frac{\pi}{8})$$

$$\text{замени } \varphi = \varphi + \frac{\pi}{18}$$

$$d\varphi = d\varphi$$

$$\frac{\partial z}{\partial \varphi z} = \frac{\partial z}{\partial \varphi^2}$$

в 2 раза кор. или  
встречали в этом пункте

$$\begin{cases} \Delta \tilde{V} = 0 \\ \tilde{V}_2|_{z=1} = -6\sqrt{3} \sin(3\varphi) \end{cases}$$

$$\tilde{V}_2|_{z=1} = -6\sqrt{3} \sin(3\varphi)$$

$$\tilde{V}(z, \varphi) = f(z) \sin 3\varphi$$

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