$$\left(\frac{\partial}{\partial s}-i\omega_0\right)h\left(t,s\right)-\int_s^t \beta\left(s-s'\right)h\left(t,s'\right)ds'=0$$

fianl condition : $h\left(t,s=t\right)=1;$

$$\left(\frac{\partial}{\partial s}-i\omega_0\right)A_1\left(t,s\right)+\int_0^s \beta\left(s-s'\right)A_1\left(t,s'\right)ds'=\int_0^t \alpha_2\left(s-s'\right)h\left(t,s'\right)ds'$$

fianl condition : $A_1\left(t,s=t\right)=1;$

$$\left(\frac{\partial}{\partial s}-i\omega_0\right)A_2\left(t,s\right)+\int_0^s \beta\left(s-s'\right)A_2\left(t,s'\right)ds'=\int_0^t \alpha_2\left(s-s'\right)h\left(t,s'\right)ds'$$

fianl condition : $A_2\left(t,s=t\right)=0;$

$$\left(\frac{\partial}{\partial s}-i\omega_0\right)B_1\left(t,s\right)+\int_0^s \beta\left(s-s'\right)B_1\left(t,s'\right)ds'=\int_0^t \alpha_1\left(s-s'\right)h\left(t,s'\right)ds'$$

fianl condition : $B_1\left(t,s=t\right)=1;$

$$\left(\frac{\partial}{\partial s}-i\omega_0\right)B_2\left(t,s\right)+\int_0^s \beta\left(s-s'\right)B_2\left(t,s'\right)ds'=\int_0^t \alpha_2\left(s-s'\right)h\left(t,s'\right)ds'$$

fianl condition : $B_1\left(t,s=t\right)=1;$

$$\beta\left(s-s'\right)=r\ell^{i\omega_0\left(s-s'\right)}\int_{\mu_L-\omega_0}^{\infty}\frac{\Lambda^2}{\Lambda^2+\omega^2}\ell^{i\omega_0\left(s-s'\right)}d\omega+r\ell^{i\omega_0\left(s-s'\right)}\int_{\mu_R-\omega_0}^{\infty}\frac{\Lambda^2}{\Lambda^2+\omega^2}\ell^{i\omega_0\left(s-s'\right)}d\omega+r\ell^{i\omega_0\left(s-s'\right)}+r\ell^{i\omega_0\left(s-s'\right)}\int_{-\omega_0}^{\mu_R-\omega_0}\frac{\Lambda^2}{\Lambda^2+\omega^2}\ell^{i\omega_0\left(s-s'\right)}d\omega$$

$$\alpha_1\left(t-s\right)=r\ell^{-i\omega_0\left(t-s\right)}\int_{\mu_L-\omega_0}^{\infty}\frac{\Lambda^2}{\Lambda^2+\omega^2}\ell^{-i\omega_0\left(t-s\right)}d\omega+r\ell^{-i\omega_0\left(t-s\right)}\int_{\mu_R-\omega_0}^{\infty}\frac{\Lambda^2}{\Lambda^2+\omega^2}\ell^{-i\omega_0\left(t-s\right)}d\omega$$

$$\alpha_2\left(t-s\right)=r\ell^{i\omega_0\left(t-s\right)}\int_{-\omega_0}^{\mu_L-\omega_0}\frac{\Lambda^2}{\Lambda^2+\omega^2}\ell^{i\omega_0\left(t-s\right)}d\omega+r\ell^{i\omega_0\left(t-s\right)}\int_{\mu_R-\omega_0}^{\mu_R-\omega_0}\frac{\Lambda^2}{\Lambda^2+\omega^2}\ell^{i\omega_0\left(t-s\right)}d\omega$$