$$\varrho_j^A = \frac{a}{4}(2j - r - 1) = \frac{a}{2}(j-1) - \frac{a}{4}(r-1) = -\varrho^A_{r+1-j}$$

$$\varrho^j_{\mathbb{R}} = \frac{a}{2}(j-1) + \frac{1+b}{2}$$

$$\varrho^j_{\mathbb{R}} = \varrho^A_j + Z/2r = \varrho^A_j + Y/2r + V_{\mathbb{R}}/4r$$

$$\text{RHS} = \frac{a}{2}(j-1) - \frac{a}{4}(r-1) + \frac{1}{2} + \frac{a}{4}(r-1) + \frac{b}{2} = \frac{a}{2}(j-1) + \frac{1}{2} + \frac{b}{2} = \text{LHS}$$

$$\frac{\Gamma^{\Omega}_{\nu+\lambda+\varrho-Y/r+V_{\mathbb{R}}/2r}\Gamma^{\Omega}_{\nu-\lambda+\varrho-Y/r+V_{\mathbb{R}}/2r}}{\Gamma^{\Omega}_{\nu}\Gamma^{\Omega}_{\nu-Y/r+V_{\mathbb{R}}/2r}} = \frac{\Gamma^{\Omega}_{\nu+\lambda+\varrho-Z/r}\Gamma^{\Omega}_{\nu-\lambda+\varrho-Z/r}}{\Gamma^{\Omega}_{\nu}\Gamma^{\Omega}_{\nu-Z/r}}$$