CONCLUSION

In the same way as First Integral Representation of the Legendre polynomials

$$P_n(u) = (2^{n+1}\, i\pi)^{-1} \oint_{\mathscr{C}} (z^2 - 1)^n (z - u)^{-n-1}\, dz$$

is a starting-point for their generalization [11] and for further study of their properties, the two integral representations (2) and (8) play a similar role in the case of the orthogonal exponential polynomials. If a Taylor polynomial is used to express the numerator in First Integral Representation, $z^n(z - 1)^{n-1} = \sum_{k=0}^{k=2n-1} A_k(z - e^{-\alpha})^k$, $0 < \alpha < +\infty$, $\alpha = \text{const.}$, then the orthogonal exponential polynomials can be written in the form $\text{oep}_n(t) = \sum_{k=0}^{k=n} a_{nk}(e^{-t} - e^{-\alpha})^k$, where a_{nk} obviously depend on α. Second Integral Representation may be used for the computation of values of $\text{oep}_n(t)$ if a suitable numerical method is employed for the integration of a complex function of a real variable in (8).

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