

## References

- [1] BRANFORD, A. J. (1986) On a property of finite-state birth and death processes. *J. Appl. Prob.* **23**, 859–866.
- [2] CHIHARA, T. S. (1978) *An Introduction to Orthogonal Polynomials*. Gordon and Breach, New York.
- [3] VAN DOORN, E. A. (1984) On the overflow process from a finite Markovian queue. *Performance Evaluation* **4**, 233–240.
- [4] WENDROFF, B. (1961) On orthogonal polynomials. *Proc. Amer. Math. Soc.* **12**, 554–555.

Faculty of Applied Mathematics,  
University of Twente,  
P.O. Box 217,  
7500 AE Enschede, The Netherlands

Yours sincerely,  
ERIK A. VAN DOORN

Dear Editor,

I write this in reply to a letter from Erik A. van Doorn concerning my recent paper Branford (1986). The material in this paper appeared in unpublished form in Branford (1980).

In his letter, Dr van Doorn points out that the result stated as Theorem 1 of Branford (1986) appeared with a similar proof in van Doorn (1984). This result, however, was never claimed to be new, and several earlier references were given in Branford (1986), in particular

‘... have been demonstrated in, or can easily be derived from, existing results (Karlin and McGregor (1959), ...’.

An application of the result alluded to in Karlin and McGregor (1959) gives the formula for the Laplace–Stieltjes transform of the probability distribution function for the time between successive overflows, that is, (2.6) of Branford (1986). This formula of Karlin and McGregor (1959) forms the cornerstone of the proof offered in van Doorn (1984), and so the proofs in Branford (1986) and van Doorn (1984) overlap only in the application of standard orthogonal polynomial results to provide an inversion of the Laplace–Stieltjes transform.

As stated, the reasons for offering the proof of Theorem 1 in Branford (1986) were to give a derivation of (2.6) *directly* from first principles rather than by appealing to it as a corollary to the result of Karlin and McGregor (1959) which is itself a corollary, this direct derivation then to provide the basis of the proof of Theorem 2 of Branford (1986).

Theorem 2 of Branford (1986) and its proof have not to my knowledge appeared elsewhere.

Erik A. van Doorn points out that a result in Chihara (1978), p. 47, serves to shorten the proofs of Theorems 1 and 2 of Branford (1986). In the former case, the saving appears marginal, as it merely gives the negativity of the zeros of  $p_n(x)$ , the establishment of which was already trivial. In the case of the proof of Theorem 2, however, the quoted result does indeed shorten the proof, and I am grateful to the correspondent for bringing this important point to attention.

## References

- BRANFORD, A. J. (1980) Secondary Processes Induced by Finite Birth-and-Death Processes. M.Sc. Dissertation, University of Adelaide, Australia.
- BRANFORD, A. J. (1986) On a property of finite-state birth and death processes. *J. Appl. Prob.* **23**, 859–866.
- CHIHARA, T. S. (1978) *An Introduction to Orthogonal Polynomials*. Gordon and Breach, New York.
- KARLIN, S. AND MCGREGOR, J. L. (1959) A characterization of the birth and death process. *Proc. Acad. Nat. Sci. U.S.A.* **45**, 375–379.
- VAN DOORN, E. A. (1984) On the overflow process from a finite Markovian queue. *Performance Evaluation* **4**, 233–240.

School of Mathematical Sciences,  
The Flinders University of South Australia,  
Bedford Park, S.A., 5042, Australia.

Yours sincerely,  
ALAN J. BRANFORD

Dear Editor,

I am writing about the paper by Gani and Tin (1985), published in *J. Appl. Prob.* **22**, 804–815. In this connection, I should like to note that the class of processes  $\eta(t)$  which I have considered in my paper ‘Variably-branching processes with immigration and some queuing processes’ contributed to *Stochastic Processes and the Problems of Mathematical Physics*, published in 1979 by the Institute of Mathematics of the Ukrainian SSR Academy of Sciences, 37–56 partly covers the processes discussed in this publication. In particular, those special cases considered by the authors come within the scope of the processes  $\eta(t)$  thoroughly studied by me.

I should be grateful if you could inform your readers about my work in this area.

Institute of Mathematics,  
Ukrainian SSR Academy of Sciences,  
Ul. Repina 3,  
Kiev, USSR.

Yours sincerely,  
ROMAN BOYKO