In conclusion, the author's presentation is attractive and lucid, quite suitable for a graduate level course on spherical functions with applications to special functions. However, for a modern unified approach to special functions based on group theory, one should look elsewhere.

REFERENCES

1. Antoni Wawrzyńczyk, *Wspólczesna teoria funkcji specjalnych*, PWN, Warszawa, 1978.

2. N. J. Vilenkin, *Spetsiyalnye funktsii i teoriya predstavlenii grupp*, Izdat. "Nauka", Moskva, 1965, English transl. in *Special functions and the theory of group representations*, Monographs, vol. 22, Amer. Math. Soc., Providence, R. I., 1968.

3. J. Talman, *Special functions: a group theoretic approach*, Benjamin, New York, 1968.

4. S. Helgason, *Differential geometry and symmetric spaces*, Academic Press, New York, 1962.

5. ______, *Differential geometry, Lie groups and symmetric spaces*, Academic Press, New York, 1978.

6. W. Miller, *Lie theory and special functions*, Academic Press, New York, 1968.

7. T. Inoui, *Unified theory of recurrence formulas*, Progr. Theoret. Phys. **3** (1948), 169–187, 244–261.

8. L. Infeld and T. Hull, *The factorization method*, Rev. Modern Phys. **23** (1951), 21–68.

9. T. Koornwinder, *The addition formula for Jacobi polynomials and spherical harmonics*, SIAM J. Appl. Math. **25** (1973), 236–246.

10. ______, *Two variable analogues of the classical orthogonal polynomials*, Theory and Application of Special Functions (R. Askey, ed.), Academic Press, New York, 1975, pp. 435–495.

11. ______, *Jacobi functions and analysis on noncompact semi-simple Lie groups*, Special Functions: Group Theoretical Aspects and Applications (R. Askey, T. Koornwinder and W. Shempp, eds.), Reidel, Dordrecht, Holland, 1984, pp. 1–86.

12. R. Askey and J. Wilson, *A set of orthogonal polynomials that generalize the Racah coefficients or* $6-j$ *symbols*, SIAM J. Math. Anal. **10** (1979), 1008–1016.

13. D. Stanton, *Orthogonal polynomials and Chevalley groups*, Special Functions: Group Theoretical Aspects and Applications (R. Askey, T. Koornwinder and W. Shempp, eds.), Reidel, Dordrecht, Holland, 1984, pp. 87–128.

14. W. Miller, *Symmetry and separation of variables*, Addison-Wesley, Reading, Mass., 1977.

15. S. Helgason, *Lie groups and symmetric spaces*, Battele Rencontres (C. M. DeWitt and J. A. Wheeler, eds.), Benjamin, New York, 1968.

WILLARD MILLER, JR.

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The umbral calculus, by Steven Roman, Academic Press, Orlando, Fl., 1983, x + 193 pp., $35.00. ISBN 0-12-594380-6

The umbral, or symbolic, notation was originated by Aronhold and Clebsch in the middle of the nineteenth century and proved to be an important tool in the theory of algebraic invariants. It was later taken on by Blissard, who applied it to derive various algebraic and combinatorial identities.

The idea behind the umbral notation is to start with an algebraic identity involving powers $\{a^k\}$, $\{b^k\}$ and replace $a^k \leftarrow a_k$, $b^k \leftarrow b_k$, where $\{a_k\}$, $\{b_k\}$