Whenever the distribution of the observable vector y is needed in this paper, it is assumed to be normal. However, an analysis of variance makes sense within the context of elliptically contoured distributions. In this case if y has a density, it can be written

$$|\Gamma|^{-1/2} g(y'\Gamma^{-1}y), \tag{12}$$

where $g(x'x)$ is a density in R^n. If

$$\int_0^\infty v^{n/2} g(v)\, dv < \infty, \tag{13}$$

the first two moments of y exist and $Ey = 0$, $Eyy' = \Gamma$. The likelihood function has a maximum at $\xi = (n/v_g)\hat{\xi}$, where v_g is the value of v maximizing $v^{n/2}g(v)$ and $\hat{\xi}$ is the maximum likelihood estimator under normality [Anderson, Fang and Hsu (1986, Theorem 1)]. The uncorrelatedness of $S_\alpha y_t$ and $S_\beta y_u$, $\alpha \neq \beta$, holds, but in general, independence of quadratic forms does not hold. For example, if $y'S_\alpha y$ and $y'(I - S_\alpha)y$ are independent, the distribution of y must be normal [Anderson and Fang (1987, Theorem 1)]. Nevertheless, F-tests are valid [Anderson, Fang and Hsu (1986, Theorem 2)].

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It is a pleasure to read this unified account of the analysis of variance, and the relationship between its many facets, for variance models based on association schemes. The theory of association schemes is an elegant piece of mathematics, as the recent book by Bannai and Itô (1984) shows, with many areas of