

## The time structure of atmospheric Cerenkov light in extensive air showers

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1977 J. Phys. A: Math. Gen. 10 1259

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## Corrigenda

### A simple proof of the Perron–Frobenius theorem for positive symmetric matrices

Ninio F 1976 *J. Phys. A: Math. Gen.* **9** 1281

Part (iv) of the proof should read as follows.

Let  $(\omega_j)$  be a real normalized eigenvector belonging to  $\mu < \lambda$ ,

$$\sum_j a_{ij}\omega_j = \mu\omega_i.$$

By the variational theorem,

$$\lambda \geq \sum_{ij} a_{ij}|\omega_i||\omega_j| \geq \left| \sum_{ij} a_{ij}\omega_i\omega_j \right| = |\mu|.$$

If  $\mu = -\lambda$ , the above relation shows that  $|\omega_j| = x_j$  for all  $j$ , and hence there is an  $i$  for which  $\omega_i = x_i$ . Adding  $\lambda x_i = \sum_j a_{ij}x_j$  to  $-\lambda\omega_i = \sum_j a_{ij}\omega_j$  gives

$$0 = \sum_j a_{ij}(x_j + \omega_j) \geq a_{ii}(x_i + \omega_i)$$

which contradicts the fact that  $a_{ii} > 0$  and  $\omega_i = x_i > 0$ . Thus  $\mu \neq -\lambda$ .

### The time structure of atmospheric Čerenkov light in extensive air showers

Böhm E, Bosia G, Navarra G and Saavedra O 1977 *J. Phys. A: Math. Gen.* **10** 441–60

The vertical axis of figure 2 (p 443) should read ‘Anode current (arbitrary units)’ and this same axis should not appear in figure 19 (p 459).

The caption for figure 15 (p 456) should read as follows.

**Figure 15.** Calculated energy spectrum of bursts compared with measured frequencies. Calculated frequencies of bursts: 1, protons; 2, iron primaries (where (a) refers to residual primaries and (b) to secondaries); 6, threshold burst energies. Measured fluxes: 3, bursts + Čerenkov light ( $\theta = 1.5^\circ$ ); 4, bursts + Čerenkov light ( $\theta = 4^\circ$ ); 5, bursts only ( $\theta = 20^\circ$ ).  $\theta$  is the assumed opening angle of the detector.

The fifth line of the second paragraph of appendix 3 (p 457) should read : . . . (see figure 3) . . . .

Also the equation at the bottom of p 458 should read:

$$n(\alpha) \approx \exp(-\alpha/\alpha_0) d\omega \cos^n(\vec{\theta} + \vec{\alpha}).$$

### 32-vertex model on the triangular lattice

Sacco J E and Wu F Y 1975 *J. Phys. A: Math. Gen.* **8** 1780–7

The factors  $2c$ ,  $2d$ ,  $2e$  in (21) should read  $4c$ ,  $4d$ ,  $4e$ ; the definitions of  $a$  and  $b$  in (22) should be interchanged; the third line in (22) should read  $\Omega_5\Omega_6 = f_{16}f_{34} + \bar{f}_{16}\bar{f}_{34} + f_0f_{25} + \bar{f}_0\bar{f}_{25}$ .

These changes do not alter any of the discussions and conclusions of the paper. We are indebted to K Y Lin and I P Wang for calling our attention to these corrections.