

**KARHUNEN-LOÈVE BASIS FUNCTIONS OF KOLMOGOROV
TURBULENCE IN THE SPHERE (Baltic Astronomy, 17, 383, 2008,
Erratum)**

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Received: 2010 March 3

Abstract. The previously published factor, which scales the matrix elements of the eigenvalue equation as a finite outer scale of the von-Kármán model is switched on, is corrected.

Key words: turbulence – atmospheric effects – methods: numerical

SCALE FACTOR CORRECTION

The scale factor for the matrix elements

$$I_{n,n'}^{(l)} = (4\pi)^2 c_\Phi \int_0^\infty \sigma^2 \sigma^{-\beta} R_n^{(l)}(\sigma) R_{n'}^{(l)}(\sigma) d\sigma \quad (19)$$

in equation (22) of my earlier publication (Mathar 2008) was incomplete. The correct factor is a sum of two terms as follows:

$$\begin{aligned} & {}_3F_4 \left(\begin{matrix} \frac{\beta}{2}, \frac{\beta}{2} + 1, \frac{1+\beta}{2} \\ 1 + \frac{n'-n+\beta}{2}, 1 + \frac{n-n'+\beta}{2}, \frac{n+n'+\beta+5}{2}, \frac{\beta-1-n-n'}{2} \end{matrix} \mid (2\pi\sigma_0)^2 \right) \\ & + \frac{\Gamma(\frac{n+n'+3}{2})\Gamma(\frac{\beta-3-n-n'}{2})\Gamma(\frac{n+n'+5+\beta}{2})\Gamma(1 + \frac{\beta+n-n'}{2})\Gamma(1 + \frac{\beta+n'-n}{2})}{\Gamma(\beta/2)\Gamma(n + \frac{5}{2})\Gamma(n' + \frac{5}{2})\Gamma(\frac{3+n+n'-\beta}{2})\Gamma(1 + \beta)} \\ & \times (\pi\sigma_0)^{n+n'+3-\beta} {}_3F_4 \left(\begin{matrix} 2 + \frac{n+n'}{2}, \frac{3+n+n'}{2}, \frac{5+n+n'}{2} \\ n + \frac{5}{2}, n' + \frac{5}{2}, n + n' + 4, \frac{5+n+n'-\beta}{2} \end{matrix} \mid (2\pi\sigma_0)^2 \right). \quad (22) \end{aligned}$$

Figure 1 demands an equivalent correction as shown below.

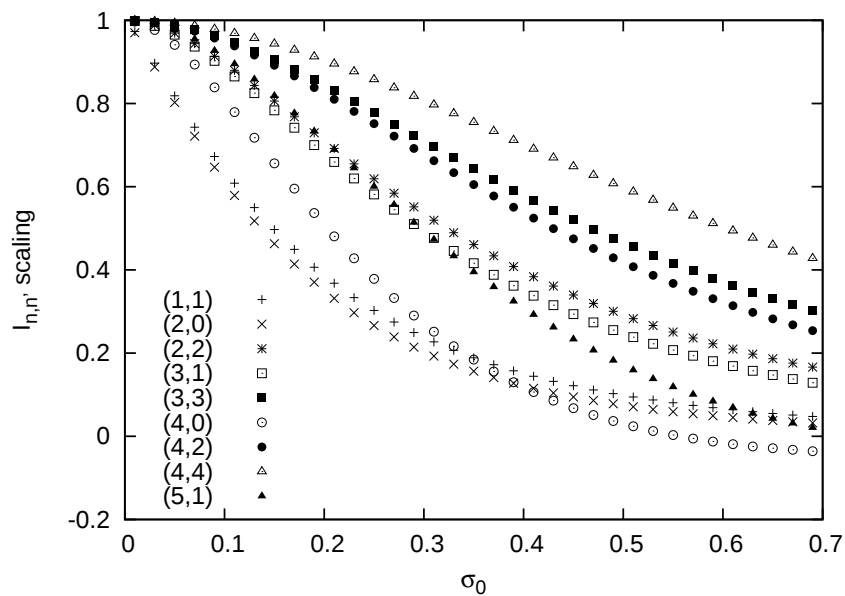


Fig. 1. The unitless factor (22) as a function of the unitless outer scale parameter σ_0 for some index pairs (n, n') .

REFERENCES

Mathar R. J. 2008, *Baltic Astronomy*, 17, 383