Astron. Astrophys. 363, 373–374 (2000)

ASTRONOMY
AND
ASTROPHYSICS

Erratum

Dynamical scaling of matter density correlations in the Universe

An Application of the Dynamical Renormalization Group

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Astron. Astrophys. **344**, 27–35 (1999)

Eqs. (23) are dimensionally inconsistent: D_θ must be replaced everywhere in these equations (except in the equation for D_θ itself) by $D_\theta \Lambda^{-2\rho-4\theta}\nu^{-2\theta}$. The magnitude V which appears in these equations is defined in the lines just above the set of Eqs. (24). In these definitions there is also a typo: when defining U_θ, the exponent of ν must read $3+2\theta$. In conclusion, Eqs. (24) remain the same, but Eqs. (23) now read:

$$
\begin{aligned}
\frac{\mathrm{d}m^2}{\mathrm{d}\log s} &= zm^2, \\
\frac{\mathrm{d}\nu}{\mathrm{d}\log s} &= \nu[z-2-\frac{\lambda^2}{\nu^3}\frac{K_d}{4d}\Lambda^{d-2}V^{-2}\{(d-2V^{-1})D_0+(d-2V^{-1}-2\rho)\Lambda^{-2\rho-4\theta}\nu^{-2\theta}D_\theta V^{-2\theta}(1+2\theta)\sec(\pi\theta)\}], \\
\frac{\mathrm{d}D_0}{\mathrm{d}\log s} &= D_0(z-2\chi-d)+\frac{\lambda^2}{\nu^3}\frac{K_d}{4}\Lambda^{d-2}V^{-3}[D_0^2+2\Lambda^{-2\rho-4\theta}\nu^{-2\theta}D_0D_\theta V^{-2\theta}(1+2\theta)\sec(\pi\theta) \\
&\quad +\Lambda^{-4\rho-8\theta}\nu^{-4\theta}D_\theta^2V^{-4\theta}(1+4\theta)\sec(2\pi\theta)], \\
\frac{\mathrm{d}D_\theta}{\mathrm{d}\log s} &= D_\theta[z(1+2\theta)-2\chi-d+2\rho], \\
\frac{\mathrm{d}\lambda}{\mathrm{d}\log s} &= \lambda[\chi+z-2-\frac{\lambda^2 D_\theta}{\nu^{3+2\theta}}\frac{K_d}{d}\Lambda^{d-2-2\rho-4\theta}V^{-3-2\theta}\theta(1+2\theta)\sec(\pi\theta)].
\end{aligned}
$$

In order to enable the reader the reconstruction of the RG flow, we append Table 1 with the eigenvalues of the linearized RG-equations at each fixed point. We also add the following remark: the fixed point P1 is degenerated, because in terms of dimensional couplings it corresponds to three possible cases. One always has $m^2=\lambda=0$, $\nu\neq 0$ (implying $z=2$) and one of the following three possibilities:

– $D_0\neq 0,\ D_\theta=0$: this yields $\chi=-1/2$, which is the quoted value for P1 in Table 1.
– $D_0=0,\ D_\theta\neq 0$: this yields $\chi=\rho+2\theta-1/2$.
– $D_0, D_\theta\neq 0$: this yields again $\chi=-1/2$, but this fixed point only exists if the constraint $\rho+2\theta=0$ is satisfied.

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Point	IR-eigenvalue	Normalized eigenvector $(U_\theta,\ U_0,\ V)$
P1	4.7	$(1,\ 0,\ 0)$
	-1	$(0,\ 1,\ 0)$
	2	$(0,\ 0,\ 1)$
P2	5.2	$(-0.934,\ 0.358,\ 0)$
	1	$(0,\ 1,\ 0)$
	2.2	$(0,\ -0.932,\ 0.363)$
P3	-1.7	$(0.571,\ 0.786,\ 0.238)$
	2.0	$(0,\ 0.999,\ 0.050)$
	-15.1	$(0,\ -0.793,\ 0.610)$
P4+	-6.2	$(-0.982,\ -0.188,\ 0)$
(for $\rho = 2.65,\ \theta = 0.1$)	1.8	$(-0.134,\ -0.991,\ 0)$
	0.64	$(0.557,\ 0.829,\ 0.042)$
P4−	-5.5	$(-0.917,\ 0.398,\ 0)$
(for $\rho = 2.65,\ \theta = 0.1$)	-1.6	$(-0.247,\ -0.969,\ 0)$
	0.62	$(0.972,\ 0.206,\ 0.116)$
P5+	$-0.4 + 3.5i$	$(-0.134 - 0.131i,\ 0.950,\ 0.188 - 0.165i)$
(for $\rho = 2.65,\ \theta = 0.1$)	$-0.4 - 3.5i$	$(-0.134 + 0.131i,\ 0.950,\ 0.188 + 0.165i)$
	-27.3	$(-0.269,\ 0.118,\ -0.956)$
P5−	-19.2	$(0.569,\ -0.819,\ -0.080)$
(for $\rho = 2.65,\ \theta = 0.1$)	8.5	$(-0.942,\ -0.185,\ 0.279)$
	-1.5	$(0.911,\ -0.405,\ -0.075)$