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PART 1:

Journal Name:	Physical Review & Research International
Manuscript Number:	**2013_PRRI_3745**
Title of the Manuscript:	**Form of nonequilibrium statistical operator, thermodynamic flows and entropy production**

PART 2:

FINAL EVALUATOR'S comments on revised paper (if any)	**Authors' response to final evaluator's comments**
Referee report on revised 2013-PRRI-3745 "Form of nonequilibrium statistical operator, thermodynamic flows and entropy production", by V.V.Ryazanov, submitted to Physical Review Research International **The author does not answer satisfactorily any my question or remark. From the formal point of view the paper is not well written.** **Nevertheless, in the following there are some remarks and suggestions.** **1.) Any new physical theory should satisfy the correspondence principle of physics. Therefore, in the limit $t-t_{0}\to\infty$ the non-equilibrium statistical operator with the distribution function $p_{q}(t)$ should recover the non-equilibrium statistical operator which satisfies the Liouville equation without sources. To prove this the author should demonstrate the Abel's theorem for arbitrary function $p_{q}(t)$:** **\begin{equation}\nonumber** **\lim_{T\to\infty} \frac{1}{T} \int_{-T}^{0} f(t) dt = \lim_{\varepsilon\to +0} \int_{-\infty}^{0} p_{q}(t) f(t) dt, \qquad p_{q}(t)=\varphi(\varepsilon,t).** **\end{equation}** **If the function $p_{q}(t)$ does not satisfy the Abel's theorem then the correspondence principle of physics is violated.** **2.) The same should be proved for the function $p_{q}(u,t)$.** **3.) I see the fundamental contradiction in the application of the maximum entropy principle to the explicit calculations of the distribution function $p_{q}(u,t)$ of the non-equilibrium statistical operator. The maximum entropy principle is related only to the equilibrium states and can not be applied to the non-equilibrium states which are described by the non-equilibrium statistical operator. Here is a contradiction.** **4.) In present paper the section "Conclusion" is similar to the section "Introduction". The author's conclusions are not clearly stated. In a good "Conclusion", the author discusses the obtained results. He/She should show how his/her results agree (or contrast) with previously published works. The obtained results and the conclusions suggested by the results should be clearly stated.** **5.) English of the paper should be essentially improved. The formulas should be written more accurately. The unnecessary symbols should be replaced from the formulas. I insistently recommend the author to use the LaTex programme writing the text of the papers instead of the Word programme.**	**1.)-2.)** The paper deals with open systems (lines 142-156, 268-270) that are not running the Liouville equation, and the effect of the environment and the type of the source is taken into account views of function $p_q(u,t)$. As an axiom accepted expression for the NSO of the form (9). From the point of view of the proposed approach using Abel's theorem Zubarev used during the transition from a uniform distribution of $p_q(u)$ corresponding to the assumption that the evolution of an equal probability may start from any quasiequilibrium state between t_0 to t, to more convenient an exponential distribution. In the absence of sources selected distribution $p_q(u,t)$ must satisfy the Liouville equation theorem and Abel's theorem. The function (17) satisfies the Abel's theorem in the form \begin{equation}\nonumber \lim_{T\to\infty} \frac{1}{T} \int_{-T}^{0} f(t) dt = \lim_{\varepsilon\to +0} \int_{-\infty}^{0} p_{q}(t) f(t) dt, \qquad p_{q}(t)=\varphi(\varepsilon,t). \end{equation} at (17-18) $p_q(0,t_0) = p_q(0) = a = C_i / F_i \approx \langle t - t_0 \rangle^{-1} = \varepsilon; \quad p_q(u,t) = ae^{-au}(1 + \frac{ar}{F_i} e^{-au})$. The proposed approach does not necessarily take the limit $t\text{-}t_0 \to \infty$. One can consider a system of finite volume with a finite lifetime. **3)** In the derivation of the explicit expression for the distribution function $p_{q}(u,t)$ (17) in [24] used the approach of [Schonfeldt J-H., Jiminez N., Plastino A.R., Plastino A. and Casas M. 2007, Physica A, v. 374, p.573], in which the maximum entropy principle is generalized to considered in this work the case of the Liouville equation with a source of non-equilibrium processes. **4.)** In conclusion not be repeated the introduction. In conclusion, the prospects are proposed and discussed the possibility of generalization of the NSO. In beginning of the conclusion is added the phrase with the main result of the paper. In line 299 (303) fixed a bug.