Refutation of control by quantum observation

From: Biele, R; Rodríguez-Rosario, CA; Frauenheim, T; Rubio, A. 2016. Controlling heat and particle currents in nanodevices by quantum observation. arxiv.org/ftp/arxiv/papers/1611/1611.08471.pdf. Emails: (robert.biele@gmx.net), (crodrig@mpsd.mpg.de), and (angel.rubio@mpsd.mpg.de).

"A quantum observer has zero entropy flow. Examining the entropy flow due to the local observation shows that the quantum observer does not add a new entropy flow to the system in contrast to a standard thermodynamic heat bath. Inserting [Eq. (10)] into Eq. (9) shows that the entropy flux due to the quantum observer is zero. This means that a quantum observer changes the energy flow in the system directly, without having an entropy flow connected with it."

We assume the apparatus and method of Meth8/VŁ4, where T is the designated proof value. (Other values are F for contradiction, C for falsity, and N for truth; 16-valued truth tables are row-major.)

\[
\begin{align*}
\text{LET:} & \quad p \quad q \quad r \quad s \quad p; \quad |k> \quad \text{Tr; \quad vD^2; } \\
1 \quad 2 \quad 0 \quad & \quad (%p>[#p)); \quad (%p>[#p)); \quad (%p>[#p])-(%p>[#p]) \\
\text{lc\_sigmaD} & \quad |k><k| \\
\ln(p) \quad & \quad 0<p<1 \\
\end{align*}
\]

\[
\begin{align*}
\text{LDp} & = -(vD^2)[2|k><k|k><k| - |k><k|p - p|k><k|] \quad (10.1) \\
\text{LDp} & = s&(((%p>[#p])&(((q&~q)&p)&(q&~q))) - (((q&~q)&p) – (p&(q&~q)))) \quad (10.2) \\
0 & = -\text{Tr}[\text{LDp}(\ln (\text{lc\_sigmaD}))] \quad (9.1) \\
((%p>[#p])-(%p>[#p])) & = (-r&((\text{LDp})&(((p&~q)<(%q>[#q]))&((q&~q)>(%p>[#p])-(%p>[#p]))))) \quad (9.2)
\end{align*}
\]

Eq. 10.1 is substituted into Eq. 9.1:

\[
((%p>[#p])-(%p>[#p])) = (-r&((s&(((%p>[#p])&(((q&~q)&p)&(q&~q))) - (((q&~q)&p) – (p&(q&~q))))&(((q&~q)<(%q>[#q]))&((q&~q)>(%p>[#p])-(%p>[#p]))))) ; \quad \text{NNNN NNNN NNNN NNNN} \quad (11.1)
\]

Eq. 11.2 as rendered is not tautologous. This means that control by quantum observation is refuted.