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# Erratum: Memory effect in a molecular quantum dot with strong electron-vibron interaction [Phys. Rev. B 67, 235312 (2003)] 

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There are typos in Eqs. (45) and (46) in the above-named paper (Ref. 1). These equations have illustrated the absence of current switching (current bistability) in a molecular quantum dot (MQD) with a double-degenerate level, $d=2$. The typos are corrected below, but they do not change the result. Indeed, current bistability does not exist in the present model of electron coupled to vibronic excitations for degeneracy $d \leqslant 2$, and we showed earlier that it also does not exist in a negative- $U$ model for the same degeneracy of the MQD (Ref. 2).

The rate equation (45) should read

$$
\begin{equation*}
n^{2}\left(a_{0}-a_{1}-b_{0}+b_{1}\right)+n\left(2-a_{0}+2 b_{0}-b_{1}\right)-b_{0}=0 \tag{1}
\end{equation*}
$$

and Eq. (46) for the two solutions for the electron occupation number $n$ should read

$$
\begin{equation*}
n_{1,2}=-\frac{2-a_{0}+2 b_{0}-b_{1}}{2\left(a_{0}-a_{1}-b_{0}+b_{1}\right)} \pm\left[\frac{\left(2-a_{0}+2 b_{0}-b_{1}\right)^{2}}{4\left(a_{0}-a_{1}-b_{0}+b_{1}\right)^{2}}+\frac{b_{0}}{a_{0}-a_{1}-b_{0}+b_{1}}\right]^{1 / 2} . \tag{2}
\end{equation*}
$$

It is straightforward to prove that the first term in Eq. (2) is negative at all parameters of the system. Indeed, we have shown that $0<b_{r}<a_{r}<1$ for any temperature and bias voltage. ${ }^{1}$ Therefore, the numerator in the first term is positive, $2-a_{0}+2 b_{0}$ $-b_{1}>0$, and it is immediately clear from the definition of $a_{r}$ and $b_{r}$, Eqs. (38) and (39) in Ref. 1, respectively, that $a_{0}-b_{0}$ $>a_{1}-b_{1}$, so that the denominator in the same term is also positive. Therefore, we see that the occupation number $n$ has only one physical root, $n>0$, for $d=2$.

We reaffirm our result that the current switching in the present model of MQD exists only for degeneracy $d>2$.

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[^0]:    ${ }^{1}$ A. S. Alexandrov and A. M. Bratkovsky, Phys. Rev. B 67, 235312 (2003).
    ${ }^{2}$ A. S. Alexandrov, A. M. Bratkovsky, and R. S. Williams, Phys. Rev. B 67, 075301 (2003).

