

Reply to "Comment on 'Generalized commutators and deformation of strong-coupling superconductivity' by A. Solomon and R. McDermott"

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## COMMENT

# Reply to "Comment on 'Generalized commutators and deformation of strong-coupling superconductivity' by A Solomon and R McDermott"

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**Abstract.** We reply to the comment by Solomon and McDermott that the  $q$ -deformed fermionic oscillator is equivalent to the usual fermionic quantum oscillator, noting that our many-body Hamiltonian is truly a deformed model of strong-coupling superconductivity.

We agree with the authors of the comment [1] that the  $q$ -deformed fermionic oscillator, as defined in [2], is equivalent to the usual fermionic quantum oscillator. We have also just noticed that the proof given by the authors of the comment had been given before [3].

However, the deformed model of the strong-coupling superconductivity considered in our paper [4] is not merely a reformulation of the ordinary strong-coupling superconductivity. The many-body Hamiltonian of our model (equations (6) and (7) in [4]), being in the form first suggested by Floratos [5] (and which is best expressed in terms of the  $q$ -deformed fermionic oscillator algebra defined in [2]), is completely different from the original Hamiltonian given by Thouless [6] (note that  $q$  is raised to different powers in different terms of our Hamiltonian). Our Hamiltonian reproduces the Thouless form only when the deformed parameter  $q$  approaches unity ( $q \rightarrow 1$ ). Hence our model is truly a deformed model of strong-coupling superconductivity. This point is also obvious from the fact that the energy spectrum of our model, given by equation (12) in [4], is different from that given in [6].

As such, our results in [4] remain intact.

## References

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