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Journal Name:	British Journal of Mathematics & Computer Science
Manuscript Number:	2015_BJMCS_17949
Title of the Manuscript:	Innovative Iterative Method for Solving the Biharmonic Equation
Type of the Article	Original Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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PART 1: Review Comments

	Reviewer's comment	Author's comment <i>(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
Compulsory REVISION comments		I am grateful for your valuable comments on the paper which have been very useful to improve it. We have followed all the instructions you have mentioned in your report. I also have answered your questions through the paper as follow: 1. This paper introduced the combination of Explicit Decoupled Group (EDG) method with Successive Over Relaxation (SOR) for solving the biharmonic equation by reducing this equation into a coupled second order Poisson equations. Regarding your point about the title of this paper, we modified the title of the paper to be meaningful as: (Efficient Group Iterative Method for Solving the Biharmonic Equation) 2. I have revised the paper in the way that becomes in clear Form and followed your points



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	1. The author(s) provide in the title the word "Innovative". Provide clearly in the abstract the original aspects introduced. 2. The manuscript needs to be thoroughly proofread. Symbols must be consistent throughout the text. Examples are (but not limited to): Abstract 2.1: The sparse linear system derived is usually solved by iterative methods such as since such method always take advantage of the existence of zeros in the coefficient matrix. 2.2: The numerical experiments carried out confirm the superiority of the former (?) method over the classical standard five point SOR formula in terms of number of iterations and execution time. Instead of former method maybe the author(s) mean the introduced method? 2.3: Explain equation (2.1). Rewrite page 3 providing additional text explaining details. The symbols used by the author(s) and the way the relations are given are confusing to say the least. 3. The system (1.2), (1.3) in the form given is not coupled. Check and clarify the symbols/functions used. 4. Table 1: I don't understand the table's caption "<i>Elapsed time measured in ×60 seconds (t×60=1second)</i>". 5. Equation (4.1) is somewhat unclear to me. By definition, the spectral radius of a (square) matrix is given as $\rho = \max_{1 \leq j \leq n} \lambda_j$ where λ denote the	as the following: 2.1. I rewrite the abstract in a more compact form and corrected some parts (Please see the highlighted parts in the Abstract Section) 2.2. I replaced the words (the former method) by the words (the introduced method). 2.3. I added some parts to explain equation (2.1) which became in number (2.4) because the addition explanation's equations. Also, we add some parts in page 3 with F.g. 1 for explanation purpose. (Please see the highlighted parts in the section 2) 3. I am sorry for this typing mistake about the system (1.2), (1.3). (Please see the highlighted parts in the Introduction Section) 4. In Table 1: <i>Elapsed time measured in ×60seconds(t×60=1second)</i> means: we can convert the value have written in the Table 1 to seconds by multiply it by 60. Regarding to this point, we
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	eigenvalues, and therefore $\rho \geq 0$. On the other hand, $q > 0$. Hence, for every $\rho > 1$ and according to (4.1), k must be greater than a negative number, i.e. always. For example, let $q = 5$ and $\rho = 2$. Then, $k \geq -\frac{5}{\log_{10} 2} = -23.25$ and (4.1) is satisfied if $k = 0$. Is this true? 6. The conclusion section should be rephrased. In there, the author(s) claim that they have “derive new iterative method which called Explicit Decoupled Group Successive Over-Relaxation (EDG SOR)” whereas in the abstract it is stated that a combination of the aforementioned methods is implemented.	rewrite the elapsed time in table 1 in seconds directly. (Please see the highlighted parts in the Table 1) 5. Regarding to your observations about equation (4.1), the equation is corrected because the spectral radius ρ must be satisfied: $0 < \rho < 1$ for the convergence of these types of iterative methods. Therefore, if we want to reduce the size of the error by 10^{-q}, say, then the number of iterations needed to do this will be the least value of k for which $\rho^k \leq 10^{-q}$. Taking logs and remembering that $\log \rho$ is negative for a convergent iteration leads to $k \geq \frac{q}{(-\log_{10} \rho)}$ which shows that ρ decreases as $(-\log \rho)$ increases. (You can see references [5, 10] for more details) (Please see the highlighted parts in the section 4)
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<u>Minor</u> REVISION comments	1. Provide additional keywords making it easier for future readers to find the article. 2. Line 23: Replace the empty box by proper symbol. Match the symbol for the unit normal vector $\hat{n}$ (and not the unit normal derivative as stated). 3. Line 53: Replace "i-plane axis and the j-plane axis" by "xy-plane".	1. I have added one more keywords to clarify this point as follows: (Coupled second order Poisson equations) Because the biharmonic equation solved by reducing it into a coupled second order Poisson equations. (Please see the highlighted keywords in the revised paper.) 2. In Line 23: the sentence is modified to clear for and rewrite $\hat{n}$ is the unit normal vector as your comment. 3. In Line 53: the modification of the sentence has been done as mentioned in the comment.
<u>Optional/General</u> comments	Analytic solutions for the non-homogeneous Biharmonic equation are well known. See for example, A. Polyanin, Handbook of Linear Partial Differential Equations for Engineers and Scientists, Chapman and Hall/CRC, 2001.	Author appreciates and accepts all Reviewers' comments.