SEMI-CIRCULANT PRECONDITIONING OF ELLIPTIC OPERATORS

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Abstract. In this work we consider the semi-circular preconditioning of elliptic differential operators of the form

$$Lu := -E\Delta u + au_x + bu_y + cu$$

in two cases; $0 < E << 1$ and $E \equiv 1$. The paper [1] provided extremely interesting and useful results in the first case. On the other hand those appear to contradict basic results on preconditioning given in [2]. We re-obtain the results of [1] by a new approach which we believe to be more transparent. We also clarify the situation regarding the apparent contradiction with [2]. Finally, we describe the distribution of the preconditional eigenvalues in the uniformly elliptic case, $E \equiv 1$.

REFERENCES

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