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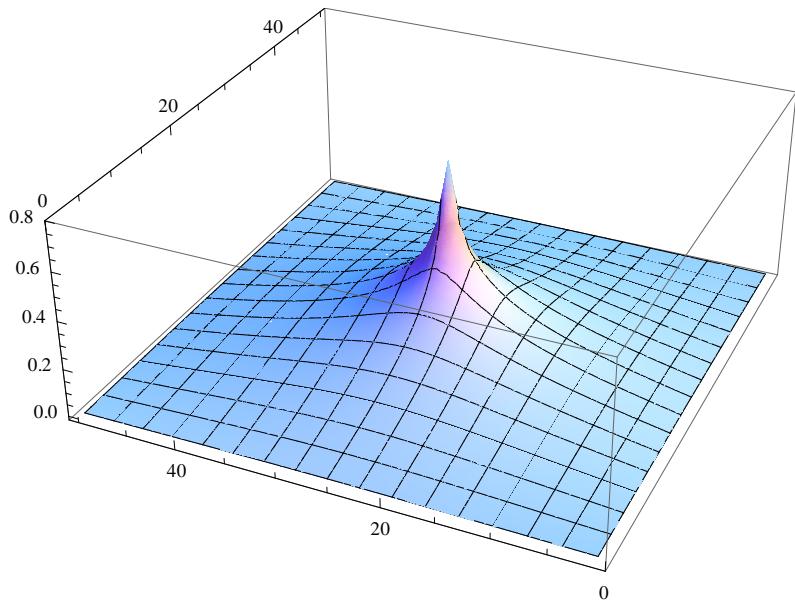
nn = 50;
A = SparseArray [{Band[{1, 2}] → 1, Band[{1, 1 + nn}] → 1,
    Band[{1 + nn, 1}] → 1, Band[{1, 1}] → -4, Band[{2, 1}] → 1}, {nn^2, nn^2}] -
SparseArray [Join[Table[{nn i, nn i + 1} → 1, {i, nn - 1}],
    Table[{nn * i + 1, nn i} → 1, {i, nn - 1}]], {nn^2, nn^2}]; A // MatrixForm;

ρ = -Flatten[SparseArray [{Ceiling[nn / 2], Ceiling[nn / 2]} → 1}, {nn, nn}]];
ρ // MatrixForm;

sol = Partition[LinearSolve[N[A], ρ], nn]; sol // MatrixForm;

ListPlot3D[Flatten[Table[{i, j, sol[[i, j]]}, {i, nn}, {j, nn}], 1], PlotRange → All]

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ListContourPlot[Flatten[Table[{i, j, sol[[i, j]]}, {i, nn}, {j, nn}], 1], PlotRange -> All]
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