Ruby master - Bug #6290
Matrix#hermitian? fails to check diagonal elements
04/14/2012 03:48 AM - kernigh (George Koehler)

<table>
<thead>
<tr>
<th>Status:</th>
<th>Closed</th>
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<tbody>
<tr>
<td>Priority:</td>
<td>Normal</td>
</tr>
<tr>
<td>Assignee:</td>
<td>marcandre (Marc-Andre Lafortune)</td>
</tr>
<tr>
<td>Target version:</td>
<td>2.0.0</td>
</tr>
<tr>
<td>ruby -v:</td>
<td>ruby 2.0.0dev (2012-04-14 trunk 35320) [x86_64-openbsd5.0]</td>
</tr>
</tbody>
</table>

Description

```
=begin
A Hermitian matrix is equal to its own conjugate transpose.

matrix == matrix.conj.t

The bug is that Matrix#hermitian? fails to check the diagonal elements of the matrix. For example, the matrix in the next script is (\(not\)) Hermitian:

require 'matrix'
i = Complex::I
p Matrix[[[-2, -3-i, 3+i ],
            [-3+i, 3,  -5-7*i],
            [ 3-i, -5+7*i, 9-4*i]]].hermitian?

This script prints (\(true\)). I expected (\(false\)), because 9-4*i != 9+4*i. Each diagonal element must equal its own conjugate (so, its imaginary part must be zero).

Matrix#symmetric? can skip the diagonal elements, because each number equals itself. Matrix#hermitian? must not skip the diagonal elements, because some number might not equal its own conjugate.

I attach a git diff with a simple fix to Matrix#hermitian?, and some test.
=end
```

Associated revisions

Revision b62792e5 - 04/16/2012 03:17 AM - marcandre (Marc-Andre Lafortune)

- lib/matrix.rb (hermitian?): Bug fix, patch by George Koehler [Bug #6290] [rubyspec:4b9573d7613]

Revision 35344 - 04/16/2012 03:17 AM - marcandre (Marc-Andre Lafortune)

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History

#1 - 04/14/2012 03:53 AM - marcandre (Marc-Andre Lafortune)
- Category set to lib
- Status changed from Open to Assigned
- Assignee set to marcandre (Marc-Andre Lafortune)
- Target version set to 2.0.0

#2 - 04/16/2012 12:17 PM - marcandre (Marc-Andre Lafortune)
- Status changed from Assigned to Closed
- % Done changed from 0 to 100

This issue was solved with changeset r35344.
George, thank you for reporting this issue.
Your contribution to Ruby is greatly appreciated.
May Ruby be with you.

Files

hermitian-fix.diff 1.24 KB 04/14/2012 kernigh (George Koehler)