Matrix#hermitian? fails to check diagonal elements

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):

```ruby
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.

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]
git-svn-id: svn+ssh://ci.ruby-lang.org/ruby/trunk@35344 b2dd03c8-39d4-4d8f-98ff-823fe69b080e

Revision 35344 - 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

<table>
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<th>File</th>
<th>Size</th>
<th>Date</th>
<th>Author</th>
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<tr>
<td>hermitian-fix.diff</td>
<td>1.24 KB</td>
<td>04/14/2012</td>
<td>kernigh (George Koehler)</td>
</tr>
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