Currently autostereoscopic displays are becoming more and more popular especially because of their capability to be used without specific glasses and also because they can handle multiple users. However, in the computer graphic case, current screens involve to generate up to nine views in real time.

The objective of our GPU-based method is to make intensive use of new capabilities of graphic cards to create contents for autostereoscopic displays. The latest shader model introducing Geometry Shaders allows us to apply transformation, duplication or/and addition to the vertices belonging to an input geometry.

Using Geometry Shaders can make possible to generate multiple images in a single pass and hence speeds up the rendering. Indeed, this approach can reduce redundant operations like vertex computation which remains the same from one view to another.

### Results

Results obtained with our GPU method compared to the classical multi-view rendering process:

<table>
<thead>
<tr>
<th>Number of views</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-pass method (fps)</td>
<td>157</td>
<td>80</td>
<td>38</td>
<td>19</td>
</tr>
<tr>
<td>Our method (fps)</td>
<td>157</td>
<td>141</td>
<td>70</td>
<td>24</td>
</tr>
</tbody>
</table>

The following results show that it exists a relationship between number of passes and the number of views per passes:

<table>
<thead>
<tr>
<th>Number of passes</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Views per pass</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Results (fps)</td>
<td>14</td>
<td>15</td>
<td>23</td>
<td>21</td>
</tr>
</tbody>
</table>