**Comparison between optical and digital blur using near visual acuity**

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**Supplementary materials**

**A** – Python code for the *COMP* method has been published elsewhere (http://sourceforge.net/projects/aberrationrendering/)24

**B** – A set of Landolt Rings rendered with an equivalent defocus of +1, +2 or +4 D using the *COMP* method. To keep the designed angular size of the Landolt Ring, the whole image (768×768 pixels) should subtend 28×28° of visual angle, giving an angular size of one pixel of ´. In *digitally\_blured\_Landolt\_rings.zip* archive, there are the images sorted into four directories (0D, 1D, 2D and 4D) corresponding to level of defocus. Individual file names denote the size of the Landolt Ring, i.e. file *100\_00.BMP* contains Landolt Ring with an outer diameter of 100.00’.

**C** – The optical power of lenses used in the experiment

**Table S3.** Dioptric values of the theoretical lenses required (Ideal), the pre-positioned combination of lenses tested (Used), and their differences for all 10 subjects. The theoretical value was determined as the sum of the optical blur required and the measured refractive power of an observer’s eye. For each observer, the dioptric power that was used to produce 0 D of blur was used for all other blur levels when testing the COMP method. The optical powers for the OPT and OPTadj methods are listed just for 1 D blur, but the Ideal-Used differences were the same for 2 D and 4 D blur.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Optical power used* | *0 D*  *(COMP)* | | | *1 D*  *(OPT)* | | | *1+ 1.67 D*  *(OPTadj)* | | |
| *Subject* | *Ideal*  *[D]* | *Used*  *[D]* | *Ideal -Used [D]* | *Ideal*  *[D]* | *Used*  *[D]* | *Ideal -Used [D]* | *Ideal*  *[D]* | *Used*  *[D]* | *Ideal -Used [D]* |
| S01 | -0.25 | -0.25 | 0.00 | 0.75 | 0.75 | 0.00 | 2.42 | 2.37 | 0.05 |
| S02 | -0.25 | -0.25 | 0.00 | 0.75 | 0.75 | 0.00 | 2.42 | 2.37 | 0.05 |
| S03 | 0.25 | 0.25 | 0.00 | 1.25 | 1.25 | 0.00 | 2.92 | 2.87 | 0.05 |
| S04 | 0.12 | 0.12 | 0.00 | 1.12 | 1.12 | 0.00 | 2.79 | 2.75 | 0.04 |
| S05 | -0.25 | -0.25 | 0.00 | 0.75 | 0.75 | 0.00 | 2.42 | 2.37 | 0.05 |
| S06 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 2.67 | 2.62 | 0.05 |
| S07 | -0.25 | -0.25 | 0.00 | 0.75 | 0.75 | 0.00 | 2.42 | 2.37 | 0.05 |
| S08 | 0.37 | 0.37 | 0.00 | 1.37 | 1.37 | 0.00 | 3.04 | 3.00 | 0.04 |
| S09 | -0.50 | -0.50 | 0.00 | 0.50 | 0.50 | 0.00 | 2.17 | 2.12 | 0.05 |
| S10 | -0.25 | -0.25 | 0.00 | 0.75 | 0.75 | 0.00 | 2.42 | 2.37 | 0.05 |
| *Mean* | -0.10 | -0.10 | 0.00 | 0.90 | 0.90 | 0.00 | 2.57 | 2.52 | 0.05 |
| *S.D.* | 0.27 | 0.27 | 0.00 | 0.27 | 0.27 | 0.00 | 0.27 | 0.28 | 0.00 |