

# Additional Notes: Accurate Analytic Approximations for Real-Time Specular Area Lighting

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This documents provides, for information, additional timings measured on a NVIDIA GeForce 980Ti @720p resolution, full screen processing and edge clipping for correct horizon handling. Note also, that some code optimizations for the GGX approximation have been done by mutualizing some instructions execution for the two axial-moments computation.

## 1. Timings

	Lorentzian	Lor-Pear Approx	Ellipsoid approx
Phong	0.12 ms/edge	0.125 ms/edge	0.127 ms/edge
Blinn-Phong / Beckmann	0.151 ms/edge	0.176 ms/edge	0.180 ms/edge
GGX	0.198ms/edge	0.258 ms/edge	0.261 ms/edge

**Table 1:** Timings in milliseconds per edge on a GPU NVIDIA 980Ti

We observe that the difference of performance between the *Lorentzian* and the other approximations is less sensitive on this GPU compared to the NVIDIA 580GTX. Additionally, the computational overhead observed in the *GGX* approximation, compared to *Blinn-Phong*, is reduced to x1.46 instead of x1.78 as provided in the paper.