Advanced Light Transport in the VFX/Archiviz industry

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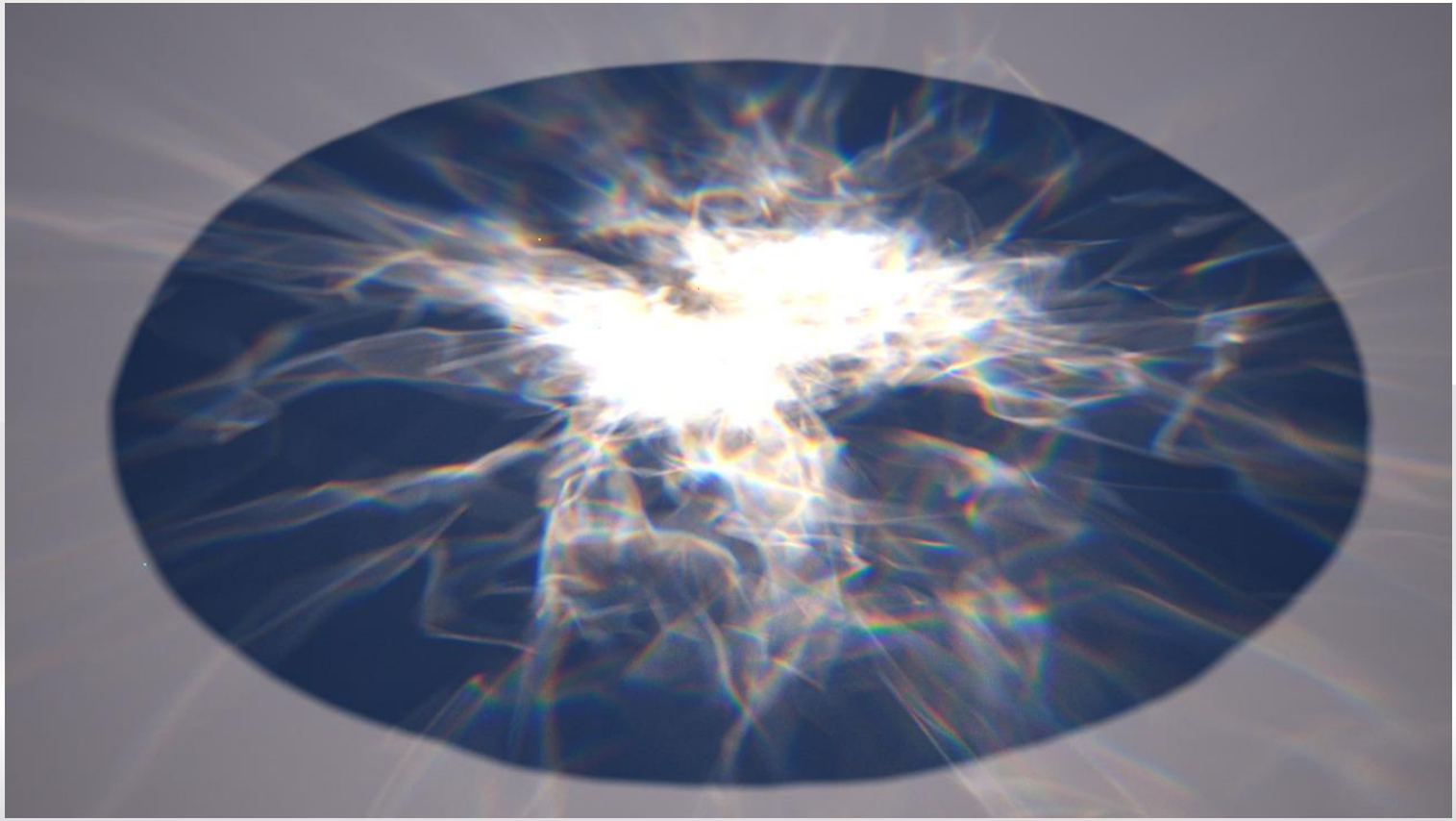
Next Limit Technologies

Agenda

- Introduction
- Existing barriers
- Possible solutions
- Next steps

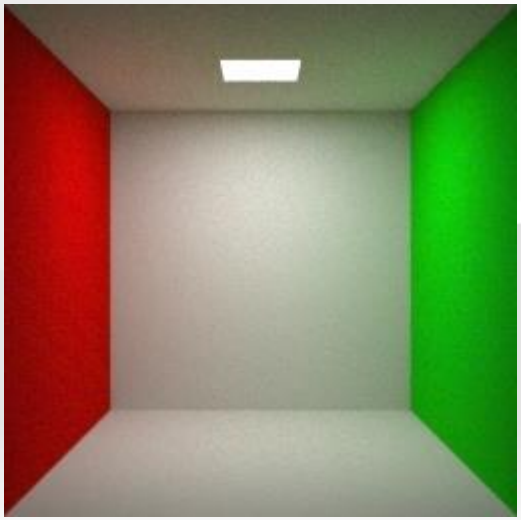
Advanced Light Transport why

Research on light transport allows us to simulate complex scenarios



Advanced Light Transport why

However current techniques are not enough



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Advanced Light Transport why

Are recent advances in light transport used by the industry?

- The majority of the industry is using old techniques
- A large percentage of current commercial renderers are PTs with MIS (1996)
- Lighting TDs have learned to optimize scenes avoiding difficult scenarios

Advanced Light Transport problems

Why are these methods not used more often?

- Performance/Robustness
- Implementation issues
- Iteration

Advanced Light Transport problems

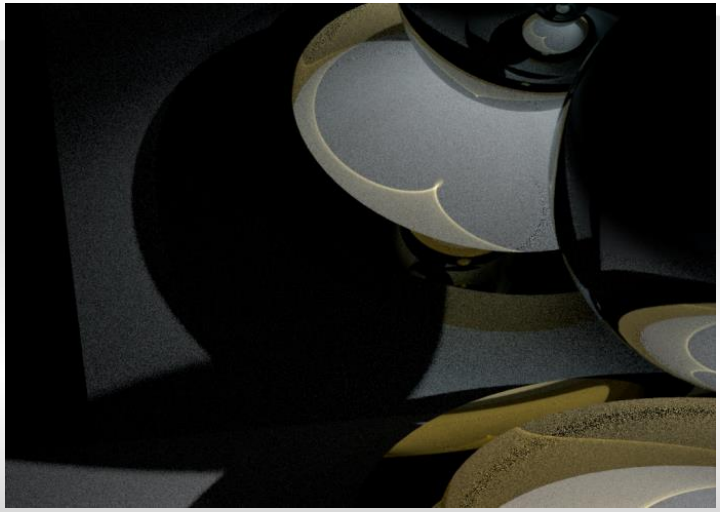
Performance issues:

- Robustness vs corner case scenarios
- Multithreading/SIMD issues

Advanced Light Transport problems

Implementation issues:

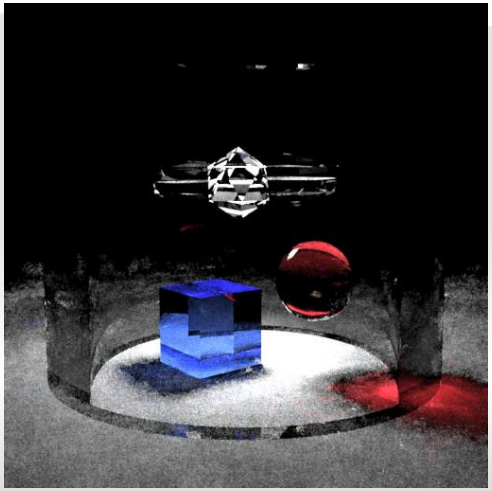
- MLT/ERT, etc implementations are convoluted
- Commercial renderers have to implement features on top
- Debugging is not fun



Advanced Light Transport problems

Iteration issues:

- Most of the renders are tests
- The user has to get feedback quickly
- Convergence of MLT might not be visually appealing
- Coherence vs Iteration (quick preview vs path exploration)



Advanced Light Transport problems

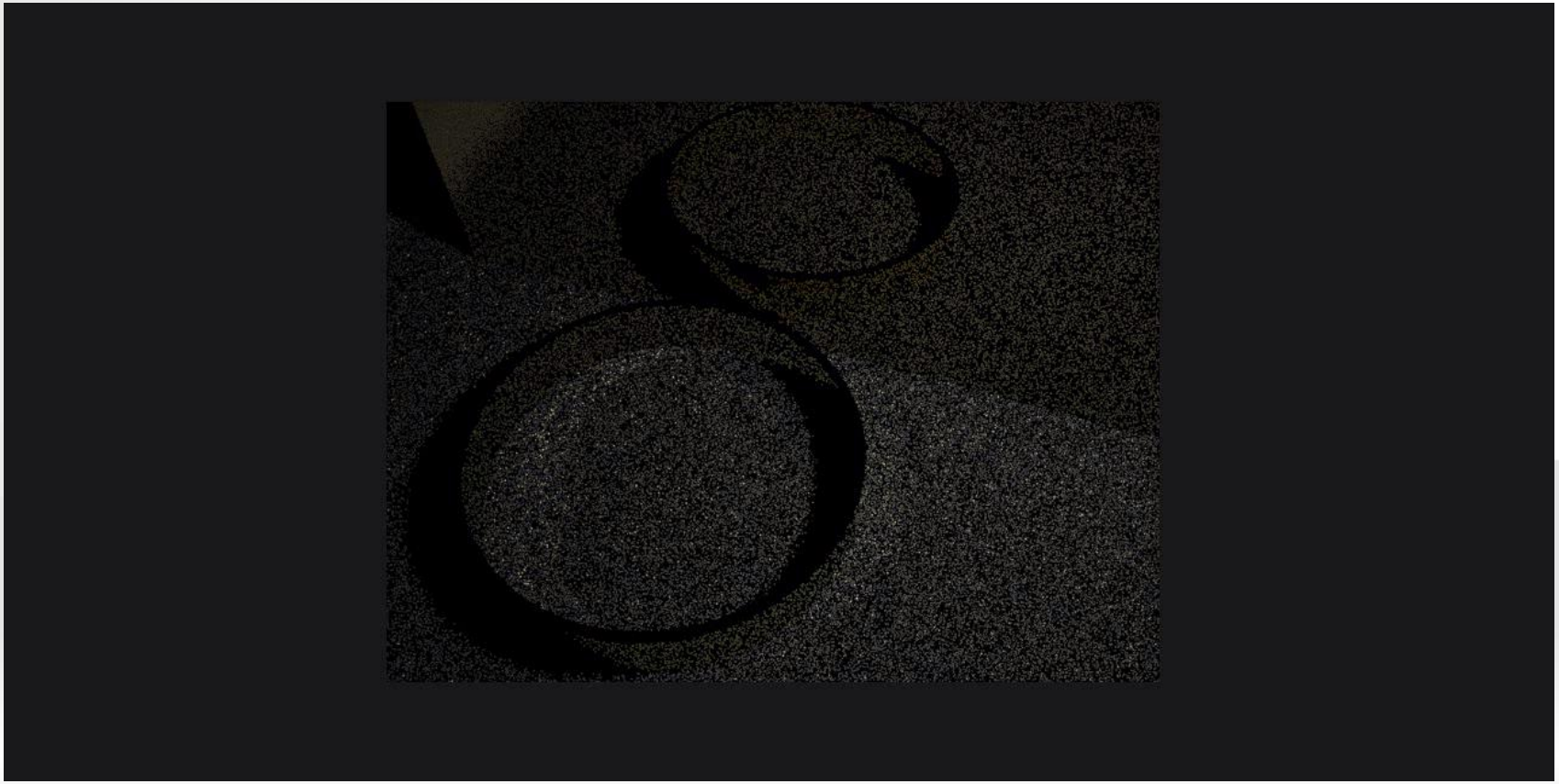
Iteration issues

Quick preview

vs

Efficient mutations

Advanced Light Transport problems



Advanced Light Transport next steps

- More research is needed
- Hybrid methods (preview vs final look)

Advanced Light Transport questions

Questions

Thanks!