

# Radiance 4.1 Improvements

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# Enhancements

- New `rtrace -n` option for multicore
- Multiprocessing `rad -N` now calls `rpiece` on single view
- Made `dctimestep` more general
- Created `genBSDF` script to simulate transmission through complex systems and pass geometry to `mkillum`



# New `rtrace -n` option

- Employs new `rayfifo.c` module
  - re-sorts parallel-rendered rays
- Works with `-I` option
- Linear speed-up, unless `-x` used
  - flushing requires clearing queue
- **Caution:** trace output is confused



# Example

```
rtrace -n 4 -ab 3 -omsv scene.oct \  
< samps.dat > results.dat
```

**NOT:** Order not preserved Flush delays

```
rtrace -n 4 -ab 3 -otms -x 2 \  
scene.oct < in.dat > confusion.dat
```



# rad -N calls rpiece

- Only one view (e.g., -v option)
- Splits image into MxM segments
  - $M = \text{floor}(8 + N/3)$
- Handles recovery if process dies
  - be careful to use same rad options



# Example

```
rad -N 2 -v ceil scene.rif
```

```
echo 8 8 > rpsync_ceil.txt
```

```
rpiece -F rpsync_ceil.txt -PP pfOWLd2E -vf ceil.vf -x 2048  
-y 2048 @run.opt -ps 4 -pt .08 -o scene_ceil.unf scene.oct  
rpiece -F rpsync_ceil.txt -PP pfOWLd2E -vf ceil.vf -x 2048  
-y 2048 @run.opt -ps 4 -pt .08 -o scene_ceil.unf scene.oct
```



# Improved `dctimestep`

- Used before with BTDF matrix:

- `dctimestep coef%03d.hdr blinds1.xml SouthGroup.dmx sky1.dat  
> result1.hdr`

- Now, without a BTDF:

- `dctimestep coef%03d.hdr sky1.dat > result1.hdr`

- Like `pcomb`, but much faster

- suggestion & initial  
implementation by Andy McNeil

- works for matrices & vectors, also



# New `genBSDF` Script

- Uses `rtcontrib` to compute scattering function for window system
- Initial implementation BTDF only
- Passes geometry to XML output
- Overcomes limitations in `mkillum`



# Example

```
genBSDF blinds1.rad > blinds1.xml
```

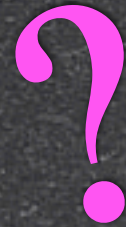
- Geometry must be oriented in standard coordinates (+Z into room)
- Input may be Radiance or MGF



# Funding Situation

- For the first time in many years, I can say that Radiance funding is at a reasonable level
- LBNL hired 1.5 FTEs (Andy and Randolph) and pays me at 1/4 time
- Program Head (Steve Selkowitz) is looking to coordinate efforts with other software developments at lab





Questions?

