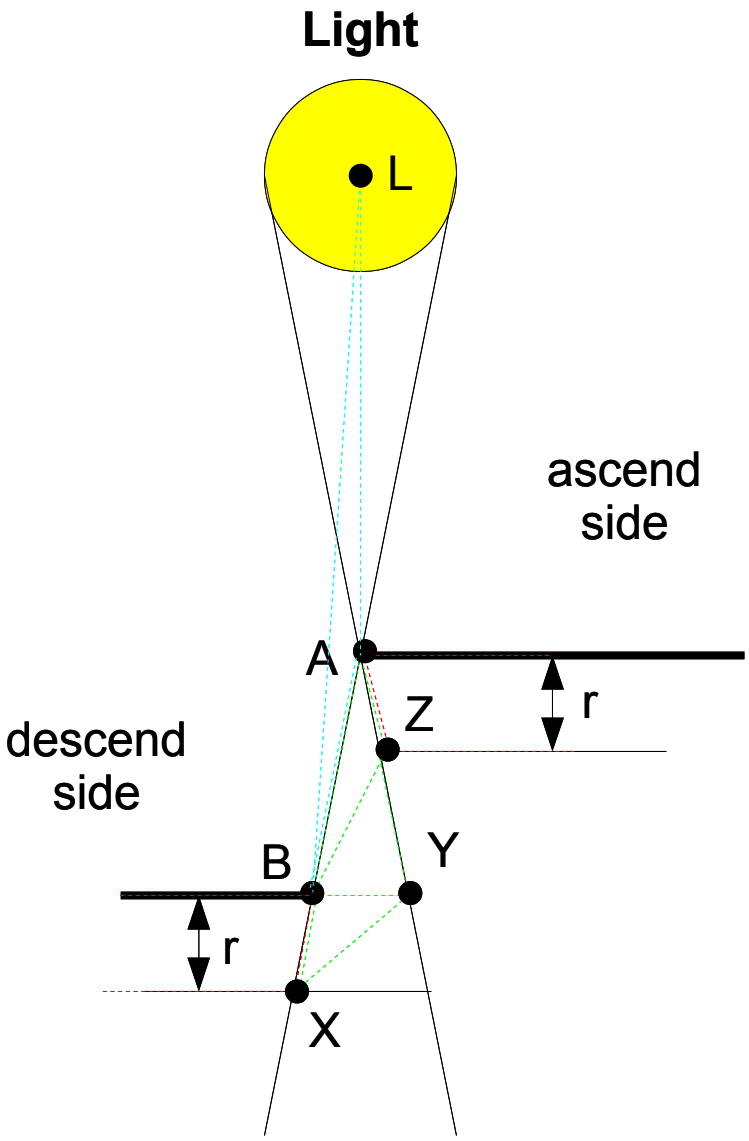
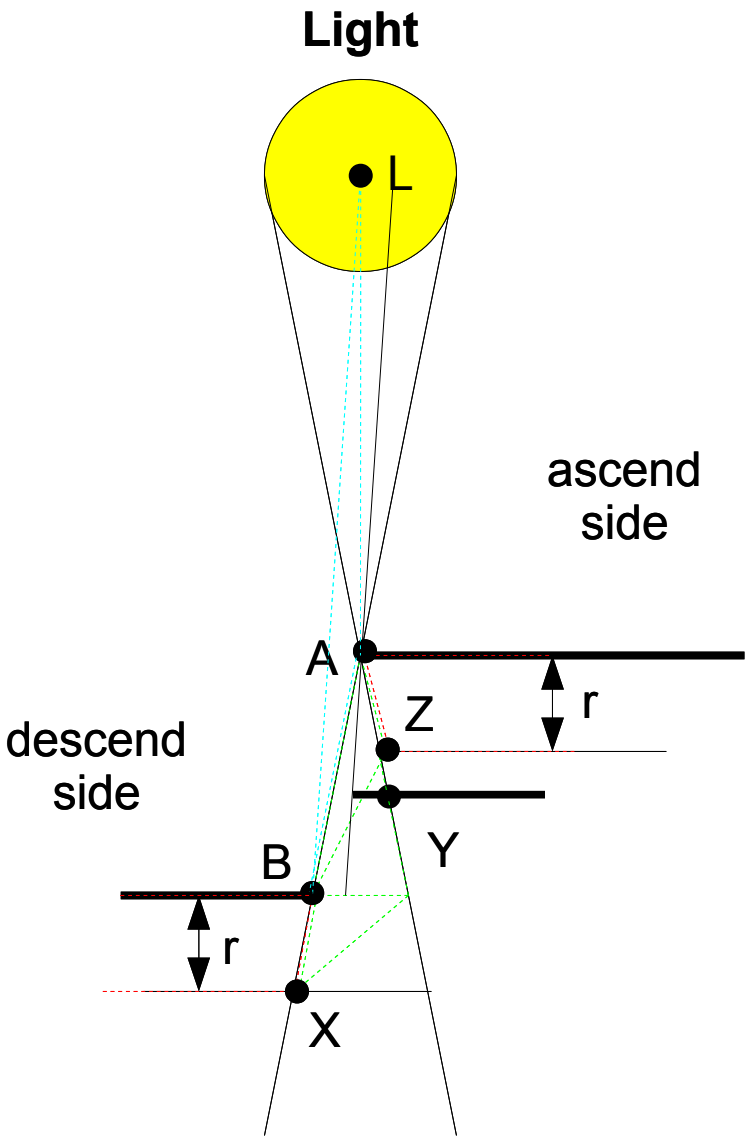
# Standard Case




- Triangle Strip side (L)BA
- Quad side BX
- Triangle BYX
- Triangle BZY
- Triangle BAZ
- Quad side AZ

With L,A,B light and X,Y,Z dark.

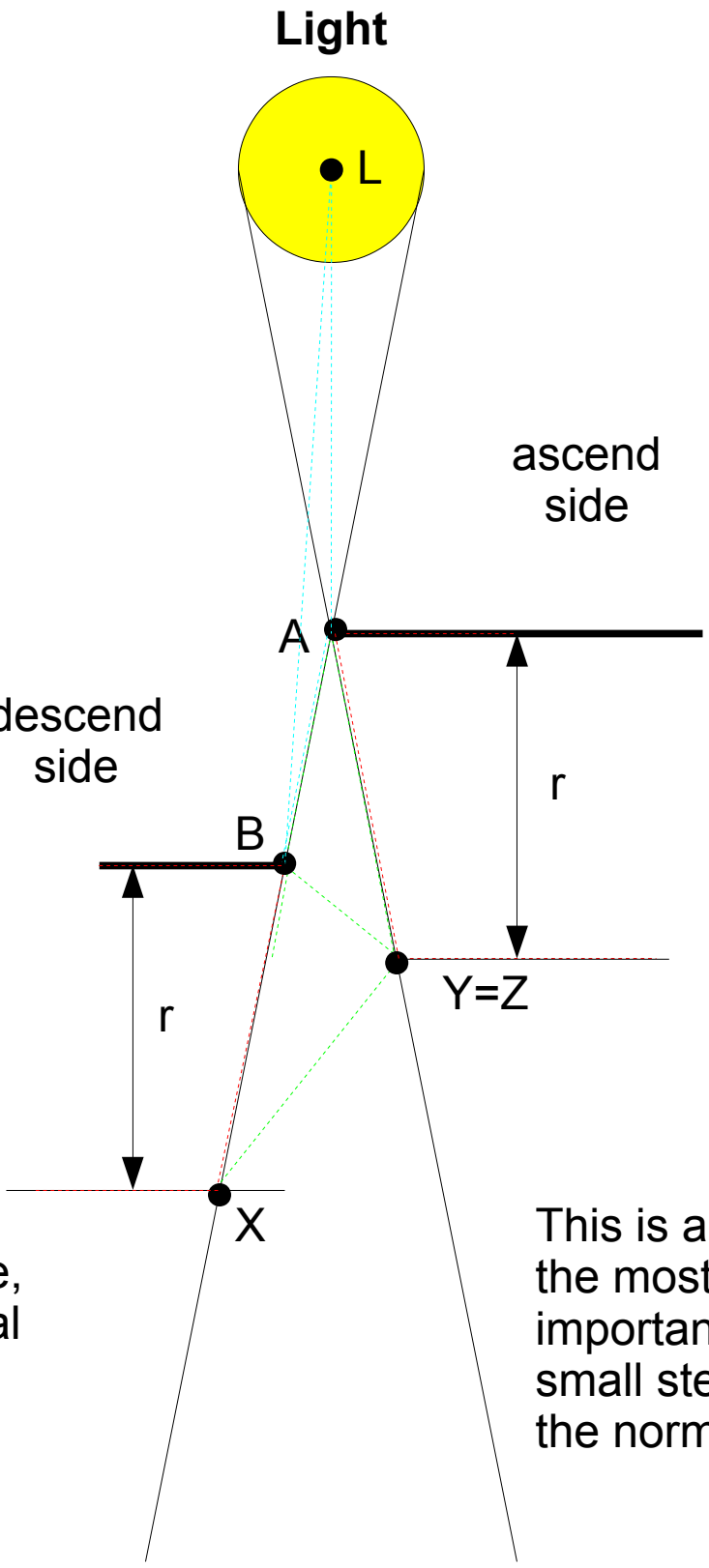
# Standard Case
(new story)




- Triangle Strip side (L)BA
- Quad side BX
- Triangle BYX
- Triangle BZY
- Triangle BAZ
- Quad side AZ

With L,A,B light and X,Y,Z dark.

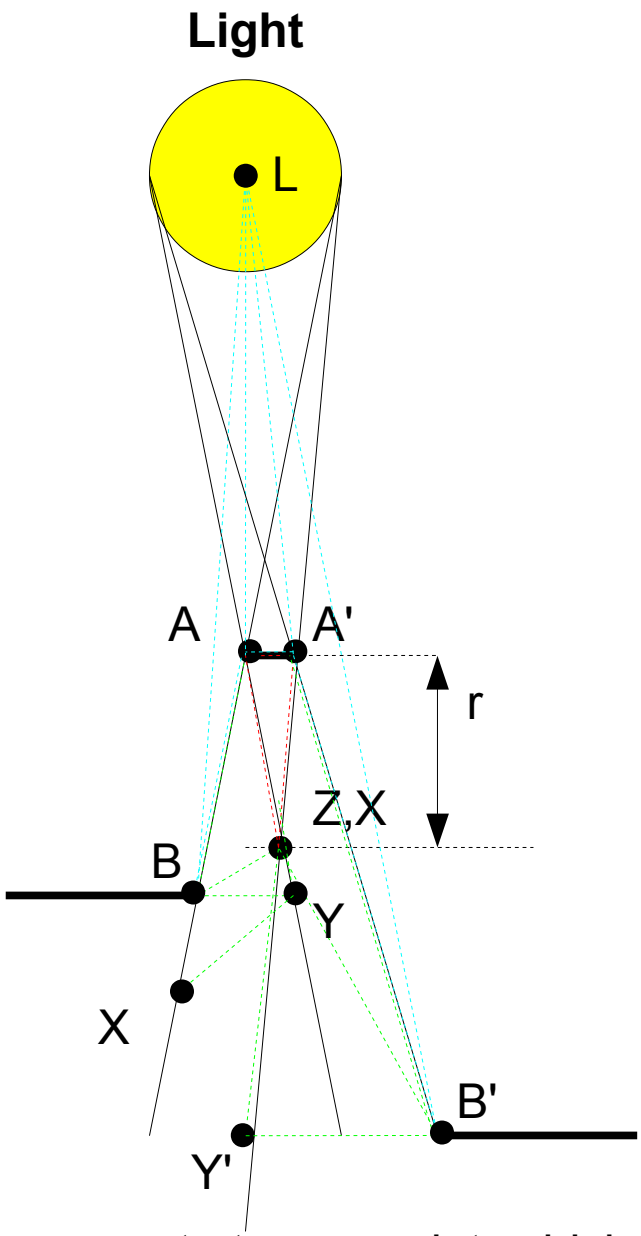
# Small Step Case




- Where r is large, Y and Z are equal
- BZY collapses, obviously

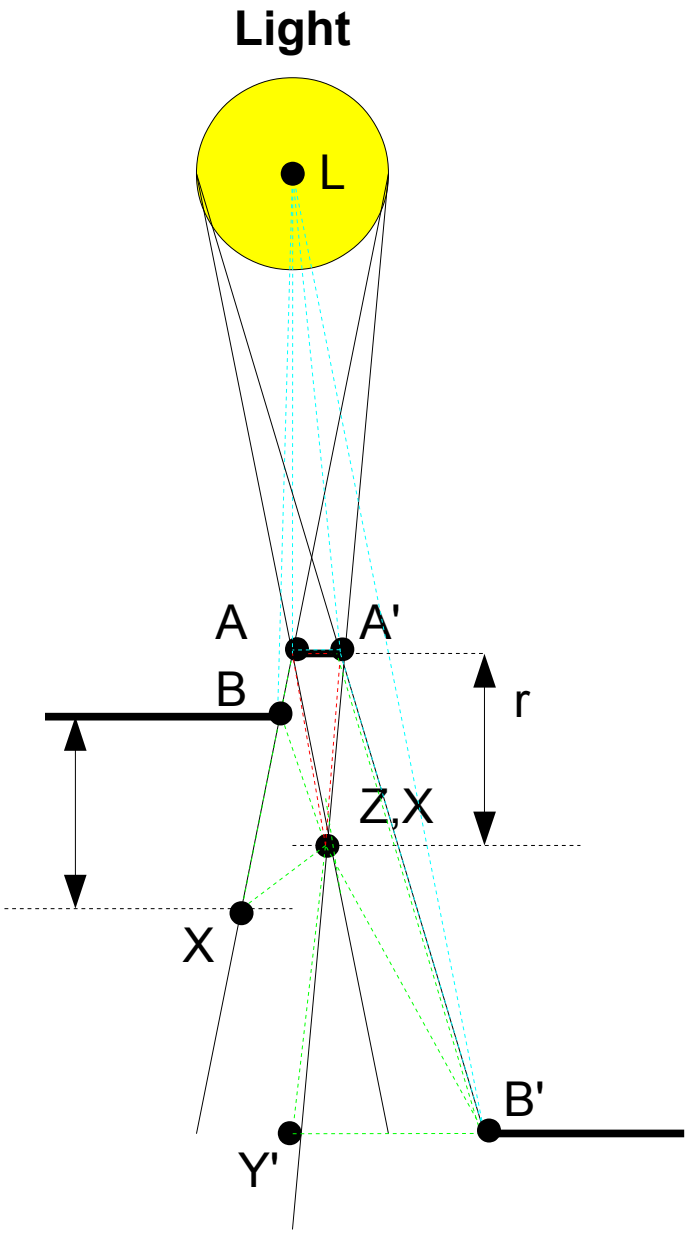
This is actually the most important case, as small steps are the norm!

# Ascend Collision



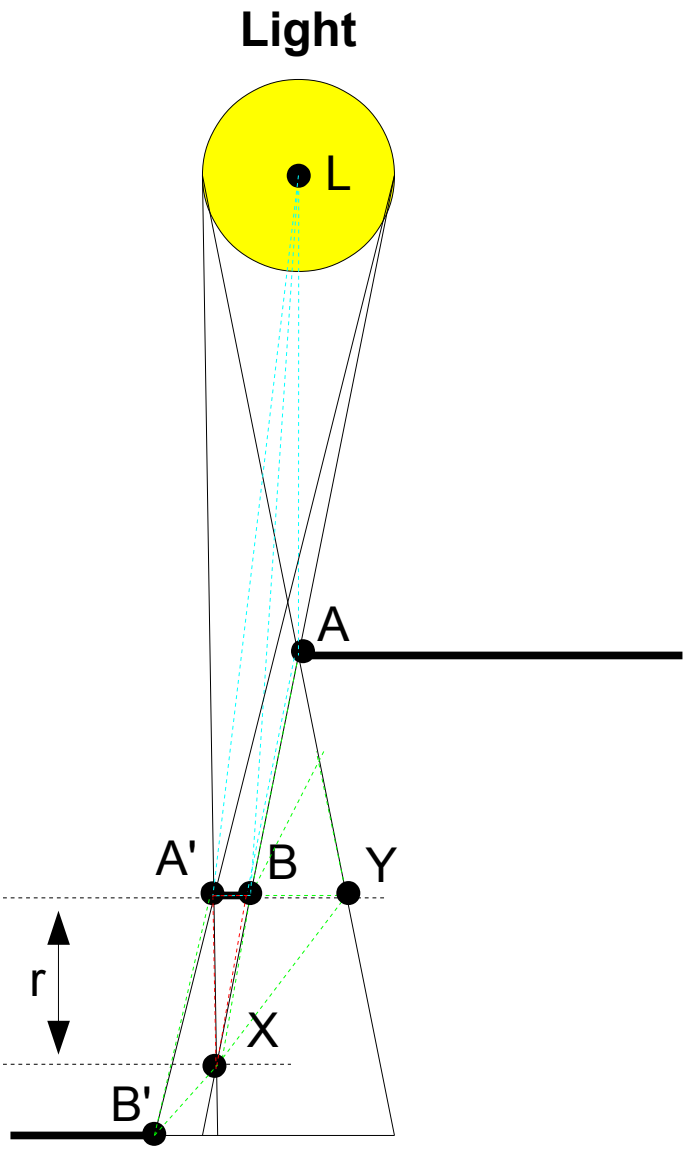

• Quad lower points degenerate to one point, which is placed in the middle between their standard locations
• BZY and B'ZY' overlap, which is okay (additive drawing – and Z,Y,Y' are dark). Important as we might get overlap between non-neighboring rays as well, so it's bothersome to check!
• Do note that Y and Y' now get derived from Z/X instead of A/A'! Might be a bit hard to see here...
• No consequence for strip

# Ascend Collision, Small Step

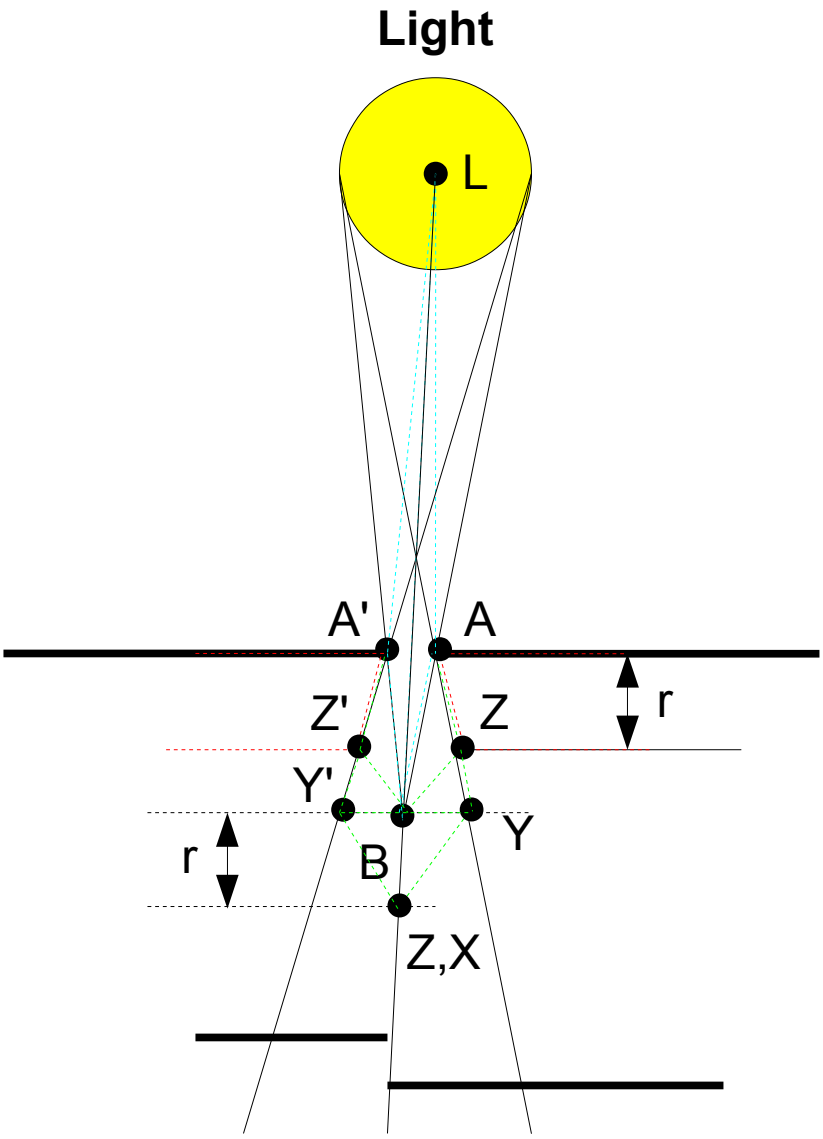



- Y and Z collapse, as before

# Ascend/Descend Collision



# Descend Collision




- Gap too small for full light to reach surface
- Treat it as if we had a zero-length surface at B
- As in... modify strip this time
- Otherwise use ascend collision rules... Z/X collapse (and are now on a line with L and B)
- Remember that this might span multiple rays. Have to look ahead! Pre-processing step?

# The Algorithm (tm)

Oh boy...

1. Ascending or Descending?
2. A is left/right point of higher ray
3. Project B from A on lower ray
4. Not on ray?
   1. Then ignore ray, continue with next.
   2. If next is higher than projection line from A, set B to cross point (descend collision)
5. Project Z from A
   1. Check for collision, move where appropriate
6. Project X from B
   1. Again check for collision
7. Is Z higher than B?
   1. If yes, project Y from Z on height of B
   2. If no, Y = Z (small step)