

Problem
215

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When the Sun is directly over the Earth (point P), it subtends an angle of $1/2^\circ$ at the center of the Earth (point O). The radius of the earth, $R = 6,378$ km, and the center-to-center Sun-Earth distance equals 149.6×10^6 km.

- When the Sun is in this position, determine the maximum diameter of the sunlight on the Earth so that the least shadow is cast by vertical rods situated at points A and B.
- How does this compare with the size of the darkest shadow cast on the Earth during a full solar eclipse?
- How long does it take the Sun to traverse its angular diameter?

