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Kimberly Arcand is the visualization lead for NASA's Chandra X-ray Observatory, specializing in image and meaning research, and in data representation. After obtaining her undergraduate degree in biology (specializing in parasitic disease), she moved on to graduate work in computer science, and then public humanities. She lives near Providence, RI.



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Megan Watzke is the press officer for NASA's Chandra X-ray Observatory, specializing in communicating astronomy with the public. She received her undergraduate degree in astrophysics and a master's degree in science journalism and has worked in the field of science communications for over two decades. From her home in Seattle, WA, she strives to expose the wonders of science to the widest possible audiences.

Together, Arcand and Watzke are the authors of *Light: The Visible Spectrum and Beyond*.



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Katie Peek, PhD began her career as an astrophysicist, searching for planets that circle distant stars and investigating the history of our own Milky Way galaxy. After earning her degree, she transitioned to science journalism and ultimately to data visualization and illustration. The former information graphics editor at *Popular Science* magazine, she today creates graphics for many publications, scientific and not. She lives in Baltimore, MD.

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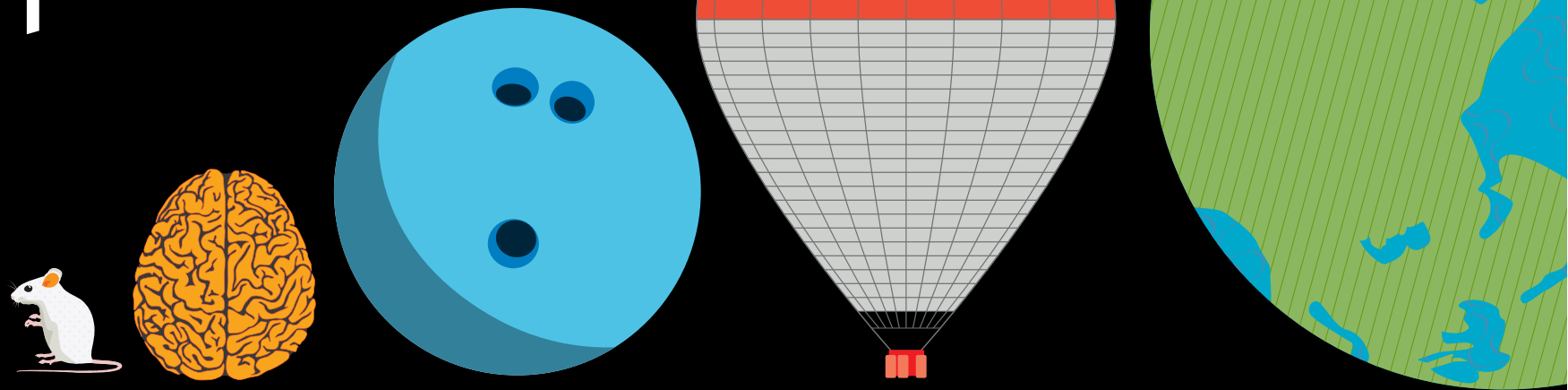
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M A G N I T U D E

KIMBERLY ARCAND and MEGAN WATZKE. Illustrated by KATIE PEEK, PhD

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MAGNITUDE



THE SCALE OF THE UNIVERSE

KIMBERLY
ARCAND
and
MEGAN
WATZKE

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KATIE
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PhD

\$27.99 U.S. / \$36.49 CAN.

Kimberly Arcand
and Megan Watzke
want to take you
on a journey . . .

to explore some of the lightest and heaviest, fastest and slowest, hottest and coldest, largest and smallest, loudest and quietest phenomena in the universe. These two brilliant women in science belong to the communications team at NASA's Chandra X-ray Observatory. One of the things that they are constantly confronted with in their work is the "hugeness" and "tininess" of the world we live in—from the infinitesimally small particle within the structure of an atom to the unfathomably large black hole that exists at the center of our galaxy. The scale of these and other similar things can be nearly impossible for our relatively medium-size human brains to conceptualize.

Enter *Magnitude*, in which Arcand and Watzke bring these hard-to-grasp ideas within reach. Organized into four main sections including Size and Quantity (covering distance, area, volume, mass, time, and temperature); Rates and Ratios (covering speed, acceleration, density, and rotation); Phenomena and Process (covering energy, pressure, and sound); and Computation, *Magnitude* takes us step-by-step across the most extreme expanses of our universe. Using a clever combination of illustrations, information graphics, and the absolutely essential logarithmic scale, Arcand and Watzke show us that understanding magnitude in the extreme just requires the right tools that allow us to explore these concepts in a clear way.

