Microgravity also called Weightlessness, is the complete or near-complete absence of the sensation of weight. It is also termed zero gravity, zero G-force, or zero-G.[1] Micro-g environment (also μg, often referred to by the term microgravity) is more or less synonymous, with the recognition that g-forces are never exactly zero. Weight is a measurement of the force on an object at rest in a relatively strong gravitational field (such as on the surface of the Earth). These weight-sensations originate from contact with supporting floors, seats, beds, scales, and the like. A sensation of weight is also produced, even when the gravitational field is zero, when contact forces act upon and overcome a body's inertia by mechanical, non-gravitational forces-such as in a centrifuge, a rotating space station, or within an accelerating vehicle.

When the gravitational field is non-uniform, a body in free fall experiences tidal effects and is not stress-free. Near a black hole, such tidal effects can be very strong. In the case of the Earth, the effects are minor, especially on objects of relatively small dimensions (such as the human body or a spacecraft) and the overall sensation of weightlessness in these cases is preserved. This condition is known as microgravity, and it prevails in orbiting spacecraft.[1]

In the present book, ten typical literatures about Microgravity on international authoritative journals were selected to introduce the worldwide newest progress, which contains reviews or original researches on Microgravity. We hope this book can demonstrate advances in Microgravity as well as give references to the researchers, students and other related people.

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[1] https://en.wikipedia.org/wiki/Weightlessness