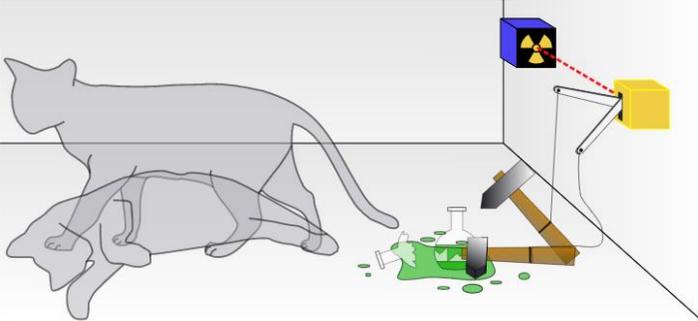


Next Generation Disruptive Technologies: Quantum Mechanics

(A2PHY001C)

<p>Introduction</p>	<p style="text-align: center;">Have you heard of Schrödinger's cat?</p>  <p style="text-align: center;">Is the cat alive or dead, or simultaneously alive and dead?</p> <p>In quantum mechanics, Schrödinger's cat may be considered simultaneously both alive and dead, which seems to go against common sense. Our world, when described in quantum mechanics, becomes a wildly unfamiliar place. Objects jump and jitter instead of moving in a continuous path. Nothing is certain and objects don't have definite properties until you measure them. Objects act as though they could be in two places at once. These sound really crazy, but it is science. Real-life applications of quantum physics are everywhere, and most of us would be totally unaware of it.</p> <p>You probably are already familiar with many of the concepts of classical physics. During the 9-session programme, you will explore the differences between quantum physics and classical physics. You will be surprised to find out that electron, light and elementary particle as quantum objects are both a particle and a wave. You will get used to the fact that you can't predict with certainty, and the best you can do is to calculate a probability.</p> <p>You will try to accept the concept that quantum particles seem to be in two or more places or states at once although it is difficult. And even more strange, two entangled quantum particles maintain a special relationship, even if they are separated by large distances.</p> <p style="text-align: center;">Are you curious about this fantastic quantum world? Come join us on a journey exploring quantum mechanics.</p>
<p>Programme Type</p>	<p>Course (Token required)</p>
<p>Facilitators/ Instructors</p>	<p>Ms GE Yufei Former Research Scientist, Institute for Quantum Computing, University of Waterloo Former Research Assistant, Quanta Lab, Massachusetts Institute of Technology</p>
<p>Target Participants</p>	<ul style="list-style-type: none"> ➢ Priority will be given to S2 to S6 HKAGE members (School Year 2020/21) ➢ Capacity: 30 <p style="background-color: yellow; text-align: center;"><i>(First-come-first-served for S2 to S6 HKAGE members, P4 to S1 students will be on waiting list)</i></p>
<p>Medium of Instruction</p>	<p>English (supplemented with Cantonese and Putonghua, if necessary)</p>

E-certificate	<p>Participants who attended 8 sessions will be awarded with an e-certificate of Completion by HKAGE.</p> <p>Participants who also fulfil the performance requirements will be awarded an e-certificate with a remark of Merit or Distinction.</p>																																													
<p>Schedule</p> 	<table border="1" data-bbox="381 420 1495 1136"> <thead> <tr> <th>Session</th> <th>Date</th> <th>Time</th> <th>Venue</th> <th>Theme and Activity</th> </tr> </thead> <tbody> <tr> <td>1</td> <td rowspan="2">16 Aug 2021</td> <td>10:00 – 12:00</td> <td>HKAGE 203</td> <td>Classical mechanics and quantum mechanics</td> </tr> <tr> <td>2</td> <td>15:00 – 17:00</td> <td>Zoom</td> <td>Particle-wave duality</td> </tr> <tr> <td>3</td> <td rowspan="2">17 Aug 2021</td> <td>10:00 – 12:00</td> <td>HKAGE 203</td> <td>Heisenberg uncertainty</td> </tr> <tr> <td>4</td> <td>15:00 – 17:00</td> <td>Zoom</td> <td>Interpretation of quantum mechanics</td> </tr> <tr> <td>5</td> <td rowspan="2">18 Aug 2021</td> <td>10:00 – 12:00</td> <td rowspan="2">Zoom</td> <td>Superposition, entanglement and decoherence</td> </tr> <tr> <td>6</td> <td>15:00 – 17:00</td> <td>Quantum Tunnelling</td> </tr> <tr> <td>7</td> <td rowspan="2">19 Aug 2021</td> <td>10:00 – 12:00</td> <td>HKAGE 203</td> <td>Dynamics of quantum systems</td> </tr> <tr> <td>8</td> <td>15:00 – 17:00</td> <td>Zoom</td> <td>Introducing quantum mechanics with polarization</td> </tr> <tr> <td>9</td> <td>20 Aug 2021</td> <td>10:00 - 12:00</td> <td>HKAGE 203</td> <td>Quantum mechanics in daily life</td> </tr> </tbody> </table> <p>The programme sessions may be cancelled or rescheduled and the delivery mode may change according to the development of coronavirus epidemic and EDB guidance.</p> <p>If the Education Bureau announces that all whole-day schools' classes will be cancelled due to inclement weather, the programme will be cancelled or rescheduled.</p> <p>For updated arrangements of inclement weather and coronavirus epidemic, please pay close attention to email notification and announcement in HKAGE website.</p>	Session	Date	Time	Venue	Theme and Activity	1	16 Aug 2021	10:00 – 12:00	HKAGE 203	Classical mechanics and quantum mechanics	2	15:00 – 17:00	Zoom	Particle-wave duality	3	17 Aug 2021	10:00 – 12:00	HKAGE 203	Heisenberg uncertainty	4	15:00 – 17:00	Zoom	Interpretation of quantum mechanics	5	18 Aug 2021	10:00 – 12:00	Zoom	Superposition, entanglement and decoherence	6	15:00 – 17:00	Quantum Tunnelling	7	19 Aug 2021	10:00 – 12:00	HKAGE 203	Dynamics of quantum systems	8	15:00 – 17:00	Zoom	Introducing quantum mechanics with polarization	9	20 Aug 2021	10:00 - 12:00	HKAGE 203	Quantum mechanics in daily life
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Intended Learning Outcomes	<p>Upon completion of the programme, participants should be able to:</p> <ol style="list-style-type: none"> identify the difference between classical physics and quantum physics. explain the concept of the particle-wave duality of matter and Heisenberg uncertainty principle. describe at least two interpretations of quantum mechanics. apply basic knowledge of superposition, entanglement, and decoherence. apply basic knowledge of Schrodinger Equation. apply basic learning management skills by keeping regular learning reflection. 																																													
Application Deadline	<p>10 Aug 2021 (Tuesday, 12 noon)</p>																																													
 Enquiries	<p>For enquiries, please contact Ms Kung at 3940 0101 (after language selection, press 6) or email to ale@hkage.org.hk.</p>																																													