

# 流光魅影

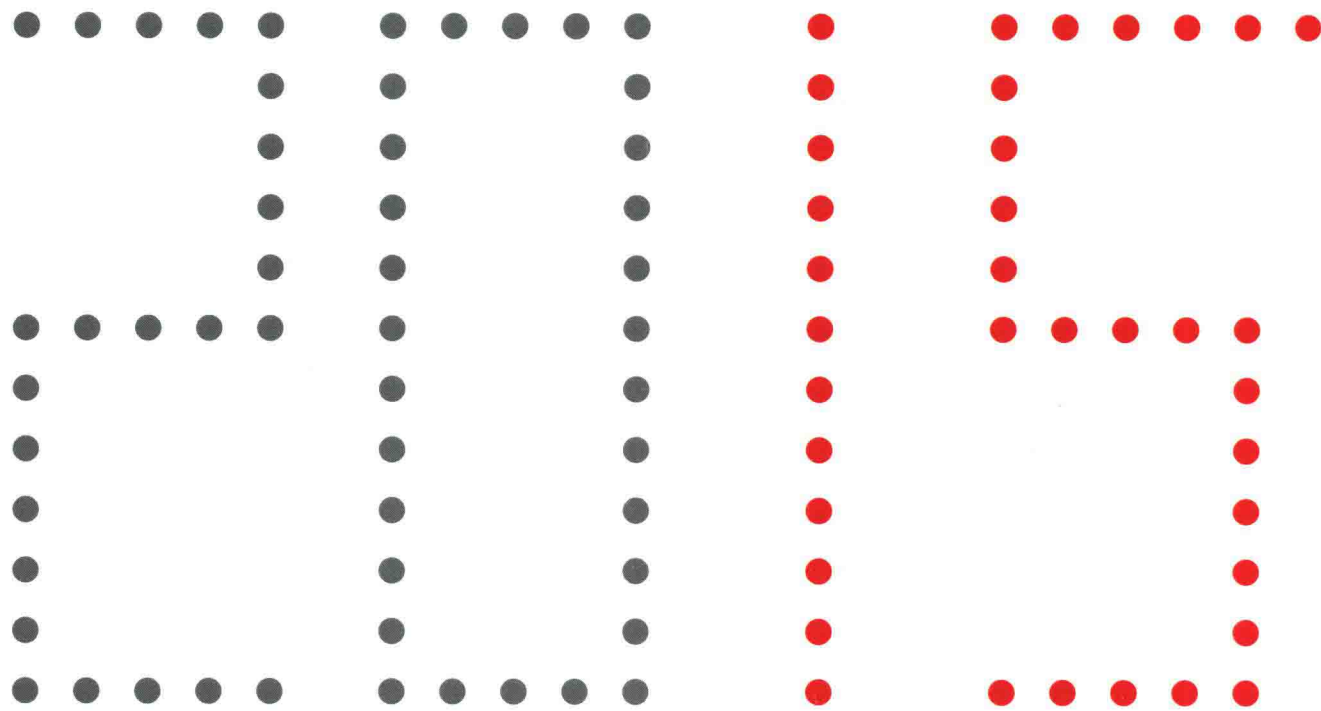


向 2015 国际光年致敬

同济大学建筑学专业“建筑物理（光环境）”教学成果专辑

郝洛西 等 著

LET'S BE YOUR LIGHT



同济大学出版社  
TONGJI UNIVERSITY PRESS

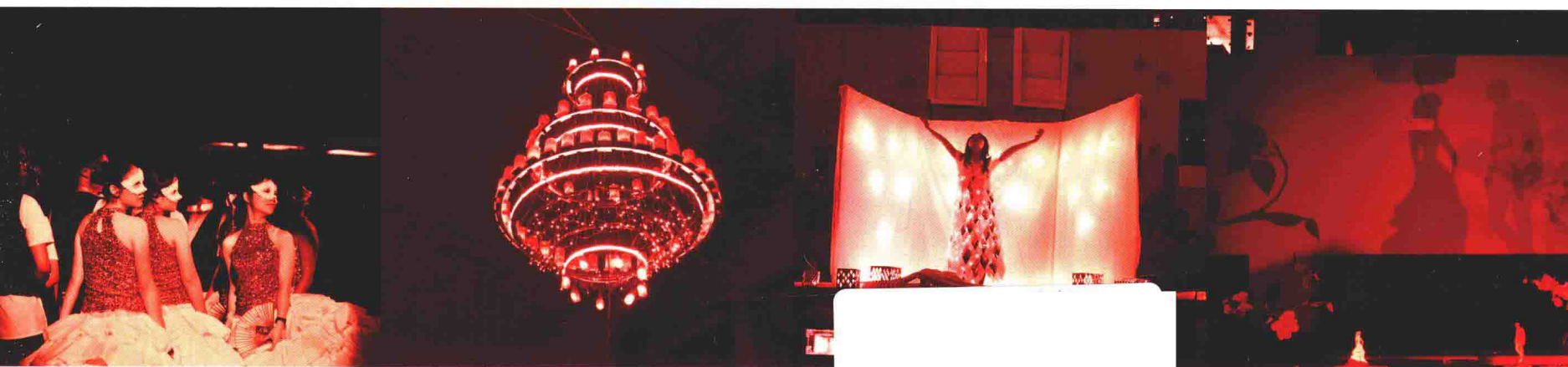
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2015 · 流光魅影

郝洛西 等 著

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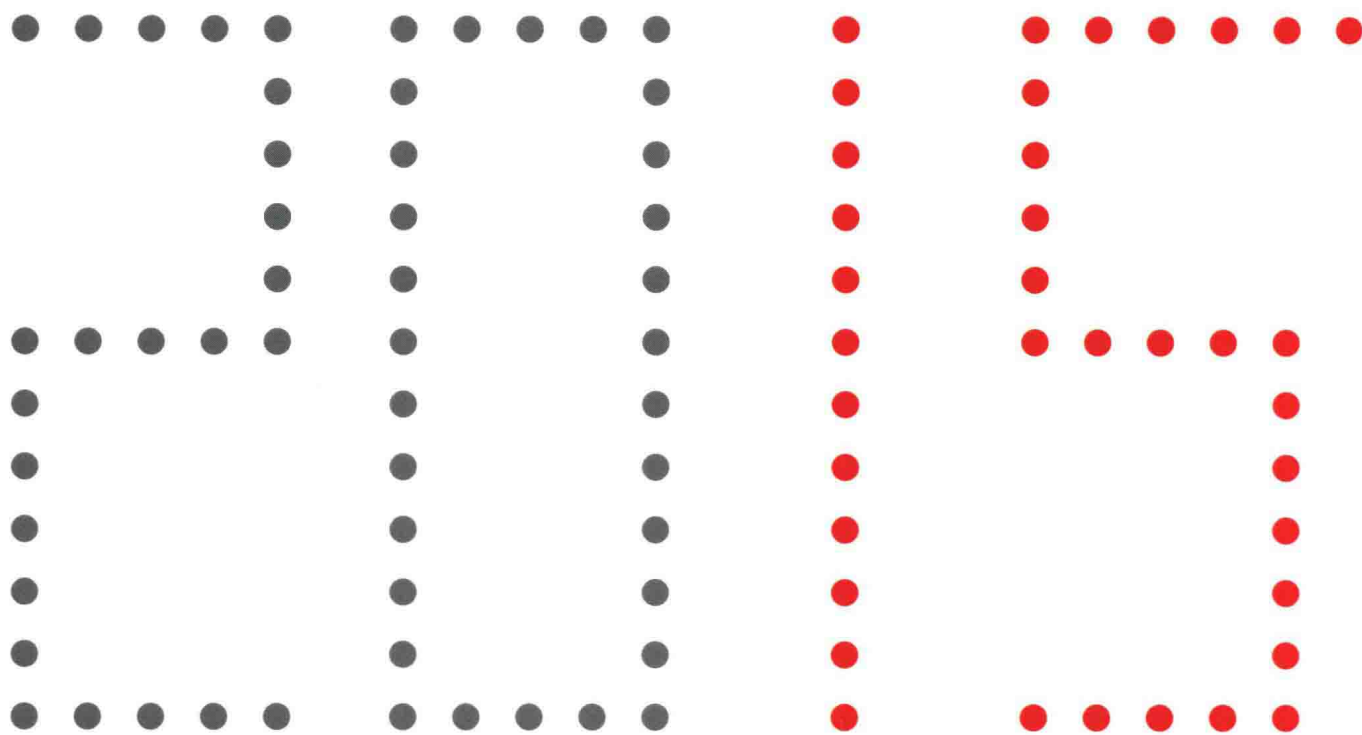


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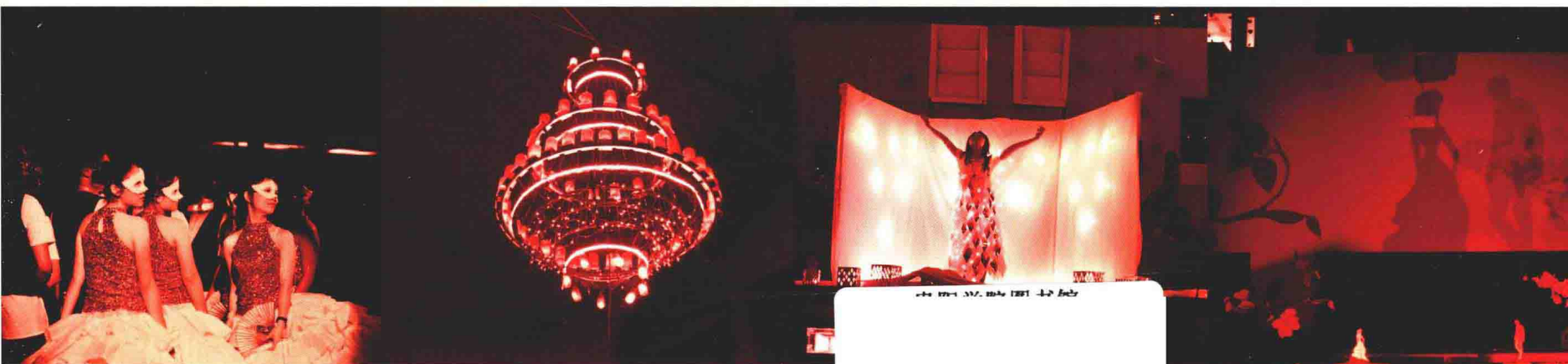
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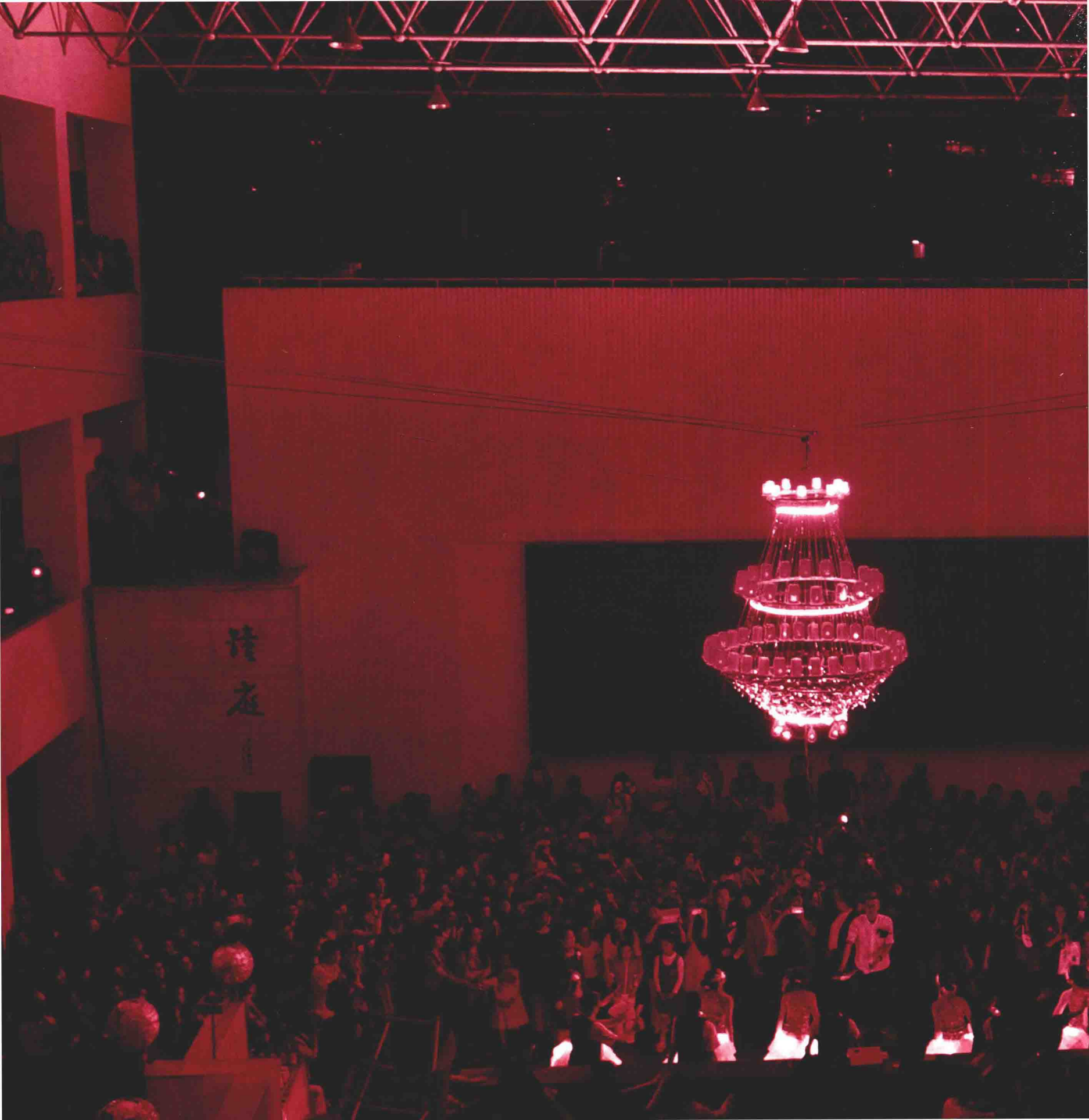
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# Light and shadow, heart and shape

Ever since the existence of light, numerous shapes of shadows follow.

Ever since the existence of architecture, light and shadows accompany it.

As the Chinese sayings go: "Hou Yi shooting the suns", "Li Bai staring at the moon" – natural light gives buildings vivid lives; "Ying people holding the candle", "Watching lanterns on the Lantern Festival" – artificial light expands the horizon of cities and architecture. In the industrial society, "Edisons" lit up the night sky and every corner of buildings with electrical lights; while in the information society, new technologies emerge. LEDs, with less energy consumption and more flexibility, emit even more beautiful light and colors, leaving people soul-stirring light and shadow.

To help future architects understand the charm of light and shadow, Professor HAO Luoxi and her team have been teaching the course "Architecture Physics: Lighting Environment" for 15 years. This is a fundamental, 17-hour course for sophomores of College of Architecture and Urban Planning (CAUP), Tongji University. The course hour is short, however, both teachers and students exhibited great involvements, and very much enjoyed the wonderful teaching and studying processes. The three books presented here in front of us today, including "2015 · Let's be Your Light", "2014 · Light Shadow and Season" and "2013 · The Light of The Antarctic", are the achievements from cooperation between teachers and students during the years 2013 – 2015.

We are moved by such achievements. These are teaching and experiments with rich characteristics of the time. They are combinations of art and technology, through cooperation between teachers and students.

They think and work: arrange light sources, design devices; they learn from history and raise questions to future, wandering around in the free realm of light and shadow, being intoxicated. They organize exhibition visits, design dramas, prepare music, and turn pure lighting technology into comprehensive art exhibitions as well as lighting festivals for teachers and students.

All of these stemmed from their desire to pursuit technology improvements, and their wish mood to seek various art forms. The forms to express vision and longing comes from their desire and wish.

We look forward to seeing Professor HAO and her colleagues to continue the innovations and "emit more gorgeous light". We appreciate people who offered their help during the series of teaching processes. We remember the warm shadows they left, and wish students great achievements in future study and creation, and "exhibit more beautiful colors".

Prof. Dr. LI Zhenyu

February 22, 2016 (The Lantern Festival)

## 光与影，心与形

自从有了光，便有了千姿百态的影。

自从有了建筑，光影便一直与之相伴。

后羿射日，李白对月，自然光赋予建筑有声有色的生命；郢人秉烛，元宵看灯，人工光拓展了城市和建筑的时空。进入工业社会，爱迪生们用电灯照亮了夜空，照亮了建筑的每一个角落；进入信息社会，新技术层出不穷，LED 以更少的能源，更便捷的组合，发出更加美妙的光色，留下更加动人的丽影。

为了让未来的建筑师们理解光影的魅力，郝洛西教授与她的团队开设“建筑物理（光环境）”已经有十五年了。这是一个 17 课时、面向同济大学建筑系本科生二年级的专业基础课程。课时虽少，但参加课程的老师、同学们却非常投入，非常享受这样美好的教学过程。今天呈现在大家面前的三本书《2015·流光魅影》《2014·光影时节》《2013·南极之光》，就是 2013–2015 年期间师生共同合作的成果。

这样的成果，让我们为之感动。这是富有时代特征的教学和实验，是艺术和技术的结合，是老师和学生的合作。

他们动脑动手，布置光源，设计装置，向历史学习，向未来提问，徜徉在光和影的自由王国里，如痴如醉；他们组织展览，策划剧情，配制音乐，把单纯的光的技术，变成了综合的艺术展示，变成了师生共同的光影节日。

这一切，都是因为他们有追求技术进取的心愿，追求艺术多态的心境。有了心，才有了表达情怀的形。

我们期待郝老师和她的同事们不断创新，发出更加绚烂的光；我们感谢给予这一系列教学活动各种帮助的人们，记住了大家留下的热情的影；我们祝愿同学们在未来的学习和创作中大有作为，呈现出更加美丽的光与色。



院长

2016 年 2 月 22 日元宵节改定



# Inheritance and development

The book series on your hands belongs to the series of Tongji "Architecture Physics: Light Environment", which is the outcome of fifteen years' teaching exploration and innovation. This book, for the first time, attempts to introduce the format of digital media besides the paper-based publication. Readers can download the APP and have an intuitive experience of the review site, and fully appreciate the splendor of each work in the books. This series includes three books: the first book is "2015 · Let's be Your Light" published in 2015; the second book is "2014 · Light Shadow and Season" in 2014; the third one is "2013 · The Light of The Antarctic" in 2013. Due to the limited space, teaching achievements before 2012 are not included in this publication; however, years of work still exudes the unique light, such as the large-scale installations "sound and light show" during the 2010 Shanghai World Expo; the work "bloom", after the demonstration in Expo cultural center, continues its applications in healthcare buildings, passing the infinite charm of light and space.

As an important fundamental course, "Architecture Physics: Light Environment" is designed for the sophomores with an architecture major. Given only 17 credit hours, the course is taught in three main aspects: (1) light, color and visual environment; (2) the light source and lamps selection (laboratory teaching); (3) quantity and quality of lighting. As there are courses "Interior Lighting Art" and "Daylight and Architecture" for senior students, this course can be seen as the entry-level courses for students to have a feeling of light and illumination. Over the years, the coursework topics are carefully designed by the teaching team, focusing on the light and optical properties of materials, shape, light-emitting device, the control concept, light drawings and expression, and other rich and comprehensive understanding. This helps students to have innovative thinking, practical hands-on operation, and the attitude of pursuing excellence in design works. As a team, students cooperate to complete the job. Everything is designed for students' self-learning, exploration, and practice.

Although the course is limited to six weeks and three credit hours per week, the students are sophomores who just stepped into the design world, and furthermore, the students must ensure that their main courses are not much affected, the students succeeded to finish the good work in the form of team work, with the limitation of defined theme, venue, time, number and color of LEDs, the conditions of environmental protection waste materials. The last day of teaching is for the show and assessment of homework. Therefore it can be treated as a time-limited quick architecture design, all the on-site dynamic changes are students' "hand control". The huge number of constraints are indeed challenges to both teaching and learning sides, and this is why I, as the teacher for this course, always be amazed by students' works.

We appreciate the support from the president of the Tongji University Press, Prof. ZHI Wenjun. He always pay close attention to the team's teaching efforts. Prof. ZHI have suggested us to publish our teaching efforts many times. Due to the fact that it is really difficult to reflect the content and expression of students' coursework by paper-based publications, this effort had been delayed to seeking the opportunity of digital-media publication. This summer, Prof. ZHI and the president of Jin Shang Digital, Mr. Xiaobo Xing, had a discussion with me at the Tongji University Press regarding the publication of this teaching effort. Ultimately, we decided to utilize both paper-based and digital-based formats to publish the three books, to share our experience and results from our 15 years of teaching on the course "Architecture Physics: Light Environment" .

Special thanks to CAUP colleges, graduate and undergraduate students, and friends from industry who participated in this teaching work. Especial thanks to LIN Yi and CUI Zhe, for their contribution in curriculum construction.

As 2015 is the "International Year of Light" declared by the United Nations, to commemorate "the father of optics" - Ibn Hazm, who wrote an important optics book a thousand years ago, and a series of important finding in optics history, we would like to take the opportunity to pay tribute to the "International Year of Light"!

HAO Luoxi  
12/15/2015

## 传承与开拓

您手中的这套书是同济大学“建筑物理（光环境）”这门课程 15 年教学探索与创新实践的成果汇编。这套书尝试在纸媒出版的基础上引入数媒，读者下载 APP 就可直观体验到作品评审时的现场情况，充分领略每个作品的光彩。本套书共计三册，第一册是 2015 年的作业汇编《2015·流光魅影》；第二册是 2014 年的作业汇编《2014·光影时节》；第三册是 2013 年的作业汇编《2013·南极之光》。由于出版篇幅所限，2012 年之前的教学成果没有列入此次的出版计划，但那些年的作品依然散发着特有的光芒，如 2010 年上海世博会期间的作业“声光 SHOW”大型装置；再如当年的作品“绽放”，历经世博文化中心的演绎应用，作为后世博的再应用，继续在医疗健康建筑中，传递着光与空间的无限魅力。

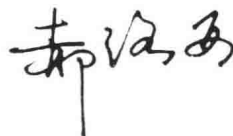
作为建筑学一门重要的专业基础课程，“建筑物理（光环境）”面对建筑学专业二年级的本科生授课，鉴于只有 17 个学时，主要讲授三个内容：光、颜色与视觉环境；光源与灯具选型（实验室授课）；照明的数量与质量。对四年级本科生开设有“室内照明艺术”和“日光与建筑”，因此可以看作是同学们接触光与照明知识的入门课程。历年课程作业选题来自教学团队的精心设计，重点在光、材质及光学特性、形态、发光器件、控制概念、光照图式及表达等丰富而综合的理解，培养学生开拓创新的思维能力、实践操作的动手能力、追求卓越的设计态度。作业完成以小组为单位，培养学生协同攻关的能力。一切向着自主学习型、设计探索型和实践应用型的学习方式迈进。

尽管只有为期六周、每周三个学时的授课，尽管他们只是初涉设计的二年级学生，但他们在保证专业课程设计作业不受影响的情况下，以团队合作的形式，在限定主题、场地、时间、LED 颗粒数量和颜色、环保废弃材料的条件下，完成最后的作业。教学的最后一天进行作业展示及评审。因此也可以说，这是一个类似建筑设计快题的限时作业，现场所有的动态变化均是学生们的“徒手控制”。如此多的限定条件，对教与学来说都是莫大的挑战，我作为任课教师和大家一样，对学生们最后呈现的作品总是每每发出由衷赞叹。

承蒙时任同济大学出版社社长的支文军教授一直以来对团队教学的关注，多次讨论将该教学成果汇编成册出版，但苦于仅凭纸质的确很难全面反映该课程学生作品的内容与表达，于是就心有不甘地一直寻求数媒出版的可能性。今年暑假期间，支教授连同“今尚数字”邢小波先生约我到同济大学出版社，一起探讨出版事宜。最终我们决定以纸媒加数媒的出版形式，由张睿老师担任责任编辑，出版这三册书，分享 15 年来承担的“建筑物理（光环境）”课程的教学成果。

在此特别致谢团队中共同进行课程建设的林怡、崔哲两位老师，还有参与教学工作的学院老师、团队研究生、历届本科生及企业界朋友。

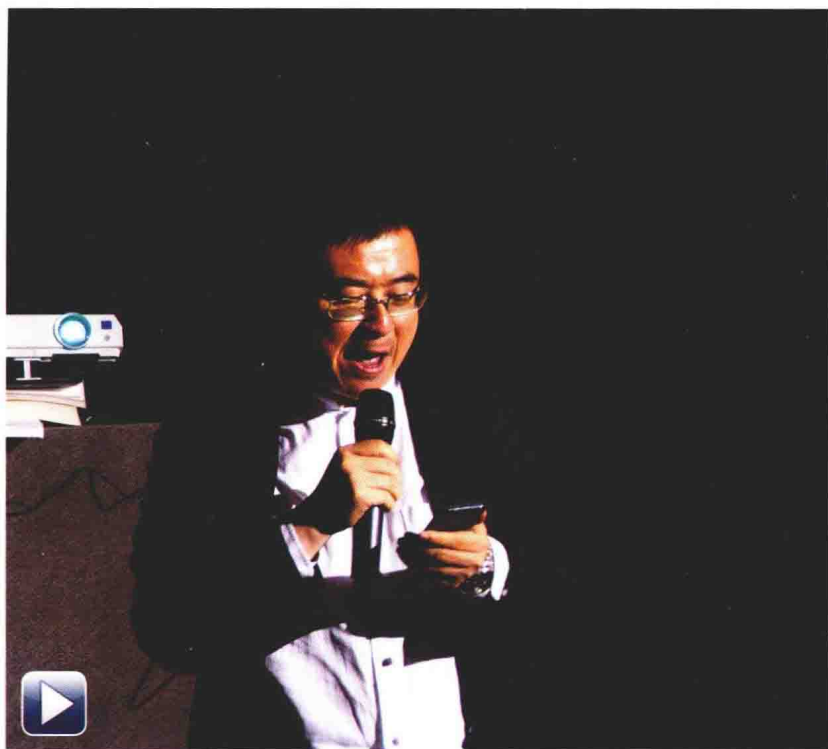
今年适逢联合国宣布 2015 年为“光和光基技术国际年（简称国际光年）”，以纪念“光学之父”伊本·海赛姆的光学著作诞生一千年及光科学历史上一系列重要发现，借这套书的出版，向国际光年致敬！



任课教师

2015 年 12 月 15 日



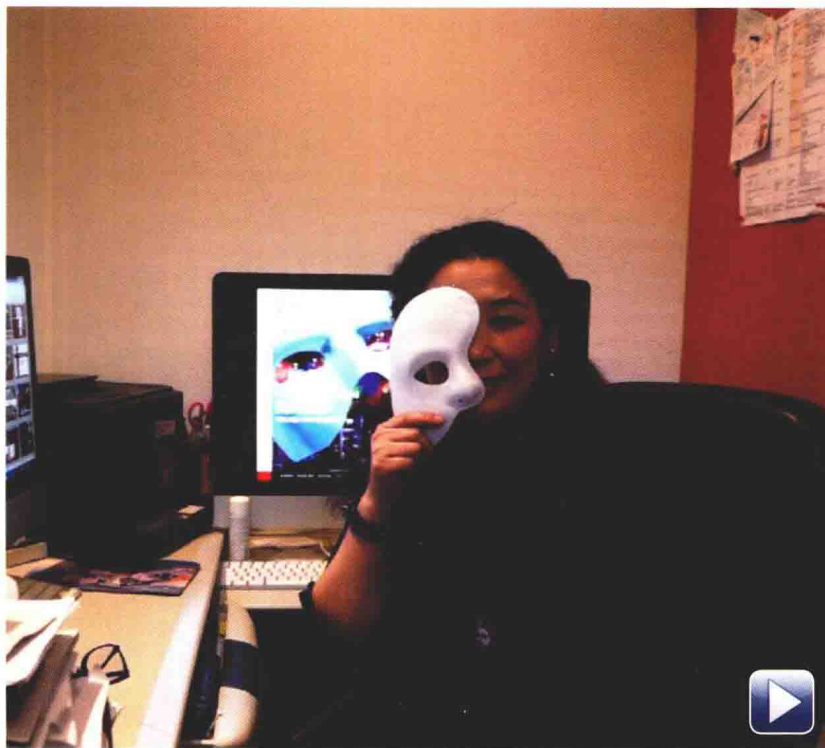


## 院长致辞 Dean address

亲爱的同学们、亲爱的老师们、尊敬的各位嘉宾大家晚上好。“流光溢彩，魅影动人”一年一度的建筑光学作业汇报展今年恰逢国际光年，因为有了郝老师团队的十分热情，同学们便以十二分的光彩回报。因为有了诸多公司和个人的鼎力相助，同学们的光谱变得更加宽广。因为有了远道而来的各位嘉宾的观赏，同学们年轻的身影变得更加迷人。霓裳羽衣、彩云追月，最美的光影在今晚，就在今晚！你们的作品是最美的设计，你们是我心中最美的学生。

同济大学建筑与城市规划学院院长

2015 年 5 月 20 日



## 指导教师致辞 Tutor address

大家晚上好，今天是同济大学光环境实验室 2015 国际光年系列活动最后一场，也是 2013 级建筑学专业“建筑物理（光环境）光影构成”作业评审展示。今晚的主题是“Let's be your light”。我们的作业素材选自音乐剧大师安德鲁·劳埃德·韦伯的代表作《剧院魅影》，通过光与音乐的互动，以光影构成的方式对其进行诠释，向 2015 国际光年致敬。我们要求学生了解新型光源——LED 的发光特点及光学特性，结合生活中常见的材料，尝试光、材质及形态的创新设计。教学环节包括课堂基础知识讲授、实验室体验教学、LED 焊接等。探索材料、光线及环境的相互关系，发挥大胆想象，将光幻化为音乐剧中的灵魂舞者，呈现一场独特的视听盛宴。

我们今晚活动的技术支持是上海 CREE 光电发展有限公司、欧司朗（中国）照明有限公司。同学们你们准备好了吗？让我们开始吧！

郝海英

任课教师

2015 年 5 月 20 日





