

## 研究生课程教学大纲 (Syllabus)

课程代码 Course Code	PHY6006	*学时 Teaching Hours	64	*学分 Credits	4
*课程名称 Course Name	Advanced Electrodynamics 高等电动力学				
*授课语言 Instruction Language	English				
*开课院系 School	Physics				
先修课程 Prerequisite					
授课教师 Instructors	姓名 Name	职称 Title	单位 Department	联系方式 E-mail	
	Jason Evans	副教授	李政道研究所	jlevans@sjtu.edu.cn	
*课程简介 (中文) Course Description					
*课程简介 (English) Course Description	<p>In addition to reviewing and expanding the basic knowledge of electrodynamics learned at the undergraduate level, this course will focus on learning the following subjects: the expression form of electromagnetic field energy in a dispersive and lossy dielectric system; application of electromagnetic field momentum in designing optical tweezers and cold atom quasi-lattice systems; random phase approximate in solution of plasma systems; magnetohydrodynamic waves; causality and Kramers-Kronig relationship; vector spherical wave eigen-solutions of electromagnetic field; multipole moment expansion representation of electromagnetic radiation and scattered light; Thomas precession and spin-orbital angular momentum coupling; the motion of charged particles in a uniform electromagnetic field; Cherenkov radiation; and the Lagrangian and Hamiltonian equations of the motion of general continuous systems (including electromagnetic fields).</p>				

	周次 Week	教学内容 Content	授课学时 Hours	教学方式 Format	授课教师 Instructor
*教学安排 Schedules	1-2	Introduction Maxwell's equations	8	lecture	Me
	3-4	Wave Propagation	8	Lecture	Me
	5-6	Radiating Systems	8	Lecture	Me
	7-8	Light Scattering and Diffraction	8	Lecture	Me
	9-10	Special Theory of Relativity	8	Lecture	Me
	11-12	Dynamics of Relativistic Particles and Electromagnetic Fields	8	Lecture	Me
	13-14	Radiation By Moving Charge	8	Lecture	Me
	14-16	Lagrangian mechanics for Continuous Systems	8	Lecture Me	
*考核方式 Grading Policy	60% homework, 40 % final exam				
*教材或参考资料 Textbooks & References	Classical Electrodynamics, Jackson				
备注 Notes					

备注说明:

1. 带\*内容为必填项;
2. 课程简介字数为 300-500 字; 教学内容、进度安排等以表述清楚教学安排为宜, 字数不限。