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Education :

1994 博士 PhD, MP, Purdue University, West Lafayette IN, USA

1991 碩士 MS, MP, University of Missouri-Columbia, Columbia MO, USA

1985 學士 BS, NE, National Tsing Hua University, Hsinchu, Taiwan

Professional Experiences

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| 1998/2-present | 助理教授 Assistant Professor
Department of Medical Imaging and Radiological Sciences,
Chang Gung University, Taiwan |
| 1998/2-present | 顧問 Consultant
Department of Radiation Oncology, Chang Gung Memorial
Hospital, Taiwan |
| 1996/1-1998/1 | 醫學物理師 Medical Physicist,
Cancer Center, Veterans General Hospital-Taipei, Taiwan |

Research Interest:

- 蒙地卡羅劑量模擬技術(Monte Carlo Radiotherapy Dose Simulation)
- 質子放射治療劑量評估(Dose Evaluation in Proton Radiotherapy)
- 質子治療的病患特殊品保(Patient-Specific QA for Proton Radiotherapy)
- 質子放射治療不確定性研究(Study in Uncertainties of Proton Radiotherapy)

PI 多年來擔任林口長庚醫院放射腫瘤科顧問(1998 年開始)，實際參與台灣第一座質子治療中心的規格訂定、設施建置、驗收過程，並協助建立機器品保流程及臨床劑量計算與量測系統，在臨床質子治療方面有豐富的實務參與經驗。近年來致力於質子治療解析及蒙地卡羅劑量模擬計算系統的相關研究，已成功建立可模擬所有長庚醫院質子治療射束特性(包含絕對及相對劑量)的蒙地卡羅劑量評估模組。PI 亦擔任長庚大學/長庚醫院共同成立之放射科學研究院下之劑量評估核心實驗室主任(於 2017 年 9 月卸任)，協助建立研究用質子劑量模擬及量測評估系統。所建立的系統已成功應用在太空電子元件的非破壞性質子照射劑量評估及接受質子 PBS 照射病患的治療計劃劑量品保評估上。除此之外，PI 近年亦致力於質子治療不確

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定性因素相關研究，針對造成治療不確定性因子(如 setup error、organ motion、CT to material conversion、range uncertainty...等)進行劑量不確定性評估研究，嘗試建立不均質病患(CT images)及四維劑量(4DCT)評估模型。近年積極參與進行的研究案主要有以下幾個:

- **Application of Compton camera images in range and dose verification for proton therapy (PI, funding: CGMH)**
- **Study of uncertainty factors for proton radiotherapy (PI, funding: CGMH)**
- **Dosimetry analysis of the Chang Gung Memorial Hospital proton radiosurgery system (PI, funding: MOST)**
- **Machine and patient-specific quality assurance procedures for intensity modulation proton therapy (PI, funding: MOST)**
- **Development of Proton Radiography and Proton CT for range verification (co-PI, funding: MOST)**
- **A quantitative study of dosimetric uncertainty caused by respiratory organ motion in proton therapy for HCC (co-PI, funding: MOST)**

Recent Publications: (Since 2012)

1. Lin YC, **Lee CC**, Chao TC, Tsai HY, "Ambient neutron dose equivalent during proton therapy using wobbling scanning system: Measurements and calculations", Radiation Physics and Chemistry, 140, 290-294, 2017.
2. Chao TC, Tsai YC, Chen SK, Wu SW, Tung CJ, Hong JH, Wang CC, **Lee CC***, "An MCNPX2.7.0 study of Bragg peak degradation owing to density heterogeneity patterns for a CGMH therapeutic proton beam", Radiation Physics and Chemistry, 137, 121-124, 2017
3. S. K. Chen, B. H. Chiang, **C. C. Lee**, C. J. Tung, J. H. Hong and T. C. Chao. The impact of MCS models and EFAC values on the dose simulation for a proton pencil beam. Radiation Physics and Chemistry, , 137, 29-32, 2017
4. **Lee CC**, Lee YJ, Chen SK, Chiang BH, Tung CJ, Chao TC, " MCNPX simulation of proton dose distribution in a pure water phantom", Biomedical Journal, 38(5), 414-420, 2015
5. Cai SY, Chao TC, Lin MJ, Tung TC, **Lee CC***, "Depth Dose Characteristics of Proton Beams within Therapeutic Energy Range using the PTSim Monte Carlo Technique", Biomedical Journal, 38(5), 408-413, 2015
6. Chao TC, Wei SC, Wu SW, Tung CJ, Tu SJ, Cheng HW, **Lee CC***, "Dual-resolution dose assessments for proton beamlet using MCNPX 2.6.0", Radiation Physics and Chemistry, 116, 237-240, 2015
7. Huang YW, Pan CY, Hsiao YY, Chao TC, **Lee CC**, Tung CJ, " Monte Carlo simulations of the relative biological effectiveness for DNA double strand breaks from 300 MeV u⁻¹ carbon-ion beams", Physics in medicine and biology, 60(15), 5995–6012, 2015
8. Kron T, Azhari HA, Voon EO, Cheung KY, Ravindran P, Soejoko D, Inamura K, Han Y, Ung NM, Bolortuya TsendenIsh, Win UM, Srivastava R, Marsh S, Farrukh S, Rodriguez L, Men Kuo, Baggarley S, DilipKumara AH, **Lee CC**, Krisanachinda A, Nguyen XC, Ng KH, "Medical physics aspects of cancer care in the Asia Pacific region: 2014 survey results", Australas Phys Eng Sci Med, 38(3), 493-501, 2015

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9. Wu SW, CJ Tung , **Lee CC**, Fan KH, Huang HC, Chao TC, "Impact of the material composition on proton range variation–A Monte Carlo study", Radiation Physics and Chemistry, 116, 199-206, 2015
10. **Lee CC**, Wu JF, Chang KP, Chu CH, Wey SP, Liu HL, Tung CJ, Wu SW, Chao TC, "The Use of Normoxic Polymer Gel for Measuring Dose Distributions of 1, 4 and 30 mm Cones", Radiation Physics and Chemistry, 104(11), 221-224, 2014
11. Yeh CY, Tung CJ, **Lee CC**, Lin MH, Chao TC, "Measurement-based Monte Carlo Simulation of High Definition Dose Evaluation for Nasopharyngeal Cancer Patients Treated by using Intensity Modulated Radiation Therapy", Radiation Measurements, 71(5), 333-337, 2014
12. Yeh CY, Tung CJ, Chao TC, Lin MH, **Lee CC***, "A dual resolution measurement based Monte Carlo simulation technique for detailed dose analysis of small volume organs in the skull base region", Radiation Physics and Chemistry, 104(11), 389-392, 2014
13. Yeh CY, **Lee CC**, Chao TC, Lin MH, Lai PA, Liu FH, Tung CJ, " Application of the measurement-based Monte Carlo method in nasopharyngeal cancer patients for intensity modulated radiation therapy". Radiation Physics and Chemistry, 95(2), 240-242, 2014
14. **Lee CC**, Lee YJ, Tung CJ, Cheng HW, Chao TC , "MCNPX Simulation of Proton Dose Distribution in Homogeneous and CT Phantoms", Radiation Physics and Chemistry, 95(2), 302-304, 2014
15. Lin YC, Wang JJ, Hong JH, Lin YP, **Lee CC**, Wai YY, Ng SH, Wu YM, Wang CC, "Noninvasive Monitoring of Microvascular Changes with Partial Irradiation Using Dynamic Contrast-Enhanced and Blood Oxygen Level-Dependent MRI", Int. J. Radiation Oncology Biol. Phys., 85(5), 1367-1374, 2013
16. Lin MH, Li J, Price RA, Wang L, **Lee CC**, Ma CM, "The dosimetric impact of dental implants on head-and-neck volumetric modulated arc therapy", Physics in Medicine and Biology, 58(1), 1027–1040, 2013
17. Tsai PF, Lin SM, Lee SH, Yeh CY, Huang YT, **Lee CC**, Hong JH, "The feasibility study of using multiple partial volumetric-modulated arcs therapy in early stage left-sided breast cancer patients", Journal of Applied Clinical Medical Physics, 13(5), 62-73, 2012
18. Wang CC, Hsiao Y, **Lee CC**, Chao TC, Wang CC & Tung CJ, "Monte Carlo simulations of therapeutic proton beams for relative biological effectiveness of double strand break", International Journal of Radiation Biology, 88(1), 158-163, 2012