Spin-L 特別セミナー

案 内

日　　時：　２０２５年２月２８日（金）・午後３時より
形　　式：　ハイブリッド開催（オンサイト・オンライン）
オンサイト会場：　岡崎カンファレンスセンター・小会議室
（愛知県岡崎市岡崎市明大寺町字伝馬８-１）
言　　語：　英語

講演者

Dr. Denis Le Bihan
Founding Director, NeuroSpin [France]

演題名

From Brownian motion to consciousness: Diffusion MRI and Einstein's legacy

要 旨

Diffusion MRI, introduced in 1985, leverages water molecular diffusive motion to create images reflecting biological tissues microstructure, offering a non-invasive method akin to virtual biopsies. This innovation initially revolutionized the management of acute cerebral ischemia by enabling early diagnosis and effective interventions. Over time, diffusion MRI has become a cornerstone in clinical and research settings, providing critical insights into tissue integrity, structural abnormalities, and early detection of changes invisible to other modalities. It has broad applications for research and in medicine, especially in neurology and oncology for cancer detection and treatment monitoring. A significant development within diffusion imaging is Diffusion Tensor Imaging (DTI), which allows the mapping of brain white matter connections in 3D. This technique has provided a deeper understanding of brain diseases, neurogenesis, and aging, while opening new research avenues in psychiatry. Generalized, the diffusion framework also connects the concepts of brain function and relativity theory, proposing that consciousness arises as a 5D holographic construct from the brain's 4D connectome, blending neural activity with a relativistic spacetime framework. Those key concepts are about to be explored using a newly developed 11.7T MRI scanner, enabling mesoscopic imaging of the human brain. This scanner has successfully captured unprecedented in vivo images of the brain, with no adverse effects observed. This breakthrough provides the neuroscience community with a powerful tool to study neurodegenerative and psychiatric disorders at a new scale. By advancing our understanding of brain structure and function, the project exemplifies the potential of ultra-high-field MRI to address the complexities of brain diseases, furthering both scientific knowledge and medical practice.

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オンライン参加の方はこちらからご参加ください。

ZOOM URL:　https://us06web.zoom.us/j/85107720651
ミーティング **ID: 851 0772 0651**　　パスコード**: spin**

主催：文部科学省共同利用・共同研究システム形成事業～学際領域展開ハブ 形成プログラム～
「分子・生命・生理科学が融合した次世代新分野創成のためのスピン生命フロンティアハブの創設」JPMXP1323015488
（スピン生命フロンティア「Spin-L」）

Spin-L Special Lecture

Information

Date & Time : Feburaly 28 th, 2025, 15:00PM～
Format : Hybrid format (onsite / online)
Onsite Venue: Conference Room C, 2nd floor, Okazaki Conference Center
(Location: Azatenma 8-1, Myodaiji, Okazaki)
Language : English

Speaker

Dr. Denis Le Bihan

Founding Director, NeuroSpin [France]

Title

From Brownian motion to consciousness: Diffusion MRI and Einstein's legacy

Abstract

Diffusion MRI, introduced in 1985, leverages water molecular diffusive motion to create images reflecting biological tissues microstructure, offering a non-invasive method akin to virtual biopsies. This innovation initially revolutionized the management of acute cerebral ischemia by enabling early diagnosis and effective interventions. Over time, diffusion MRI has become a cornerstone in clinical and research settings, providing critical insights into tissue integrity, structural abnormalities, and early detection of changes invisible to other modalities. It has broad applications for research and in medicine, especially in neurology and oncology for cancer detection and treatment monitoring. A significant development within diffusion imaging is Diffusion Tensor Imaging (DTI), which allows the mapping of brain white matter connections in 3D. This technique has provided a deeper understanding of brain diseases, neurogenesis, and aging, while opening new research avenues in psychiatry. Generalized, the diffusion framework also connects the concepts of brain function and relativity theory, proposing that consciousness arises as a 5D holographic construct from the brain's 4D connectome, blending neural activity with a relativistic spacetime framework. Those key concepts are about to be explored using a newly developed 11.7T MRI scanner, enabling mesoscopic imaging of the human brain. This scanner has successfully captured unprecedented in vivo images of the brain, with no adverse effects observed. This breakthrough provides the neuroscience community with a powerful tool to study neurodegenerative and psychiatric disorders at a new scale. By advancing our understanding of brain structure and function, the project exemplifies the potential of ultra-high-field MRI to address the complexities of brain diseases, furthering both scientific knowledge and medical practice.

Host **Norihiro SADATO**
Section of Advanced Research Support, National Institutes for Physiological Sciences

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This work was supported by MEXT Promotion of Development of a Joint Usage/Research System Project: Coalition of Universities for Research Excellence Program (CURE) Grant Number JPMXP1323015488