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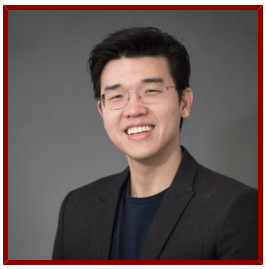

Kawin Setsompop

Professor of Radiology (Radiological Sciences Laboratory) and, by courtesy, of Electrical Engineering

Curriculum Vitae available Online

CONTACT INFORMATION

- **Alternate Contact**

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Bio

BIO

Kawin Setsompop is a Professor of Radiology and, by courtesy, of Electrical Engineering. His research focuses on the development of novel MRI acquisition methods, with the goal of creating imaging technologies that can be used to help better understand brain structure and function for applications in Healthcare and Health sciences. He received his Master's degree in Engineering Science from Oxford University and his PhD in Electrical Engineering and Computer Science from MIT. Prior to joining Stanford, he was a postdoctoral fellow and subsequently a faculty at the A.A. Martinos center for biomedical imaging, MGH, as well as part of the Harvard and MIT faculty. His group has pioneered several widely-used MRI acquisition technologies, a number of which have been successfully translated into FDA-approved clinical products on Siemens, GE, Phillips, United Imaging and Bruker MRI scanners worldwide. These technologies are being used daily to study the brain in both clinical and neuroscientific fields.

ACADEMIC APPOINTMENTS

- Professor, Radiology
- Professor (By courtesy), Electrical Engineering
- Member, Bio-X
- Member, Wu Tsai Human Performance Alliance
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Co-director of the Center for Cognitive and Neurobiological Imaging, Stanford, (2023- present)
- Associate Chair of Research Strategic Development, Department of Radiology, (2020- present)

HONORS AND AWARDS

- K99/R00 Career development award, National Institute of Health (2010)
- NIBIB New Horizon planery lecture, International Society of Magnetic Resonance in Medicine (2016)
- Fellow, International Society of Magnetic Resonance in Medicine (2020)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Advisory Board, Subtle Medical (2021 - present)

PROFESSIONAL EDUCATION

- PostDoc, Harvard University/Massachusetts General Hospital , Radiology (2010)
- Ph.D., MIT , Electrical Engineering and Computer Science (2008)
- M.Eng, Oxford University , Engineering Science (2003)

PATENTS

- Lawrence, Setsompop, Cauley. "United States Patent US 11035920 Sparse approximate encoding of Wave-CAIPI: preconditioner and noise reduction"
- Cauley, Bilgic, Setsompop, Wald. "United States Patent US10126397 Systems and methods for fast magnetic resonance image reconstruction using a heirarchically semiseparable solver"
- Hoge, Polimeni, Setsompop. "United States Patent US10175328B2 System and method for reconstructing ghost-free images from data acquired using simultaneous multislice magnetic resonance imaging"
- Zhao, Setsompop, Wald. "United States Patent US10241176B2 Systems and methods for statistical reconstruction of magnetic resonance fingerprinting data"
- Cauley, Polimeni, Setsompop, Wald. "United States Patent US10310042B2 Hierrarchical mapping framework for coil compression in magnetic resonance image reconstruction"
- Setsompop, Stockmann, Wald, Witzel. "United States Patent US10324149B2 Systems and methods for generalized slice dithered enhanced resolution magnetic resonance imaging"
- Eichner, Wald, Setsompop. "United States Patent US10345409B2 System and method for simultaneous multislice excitation using combined multiband and periodic slice"
- Cauley, Setsompop, Wald. "United States Patent US10408910B2 Systems and methods for joint trajectory and parallel magnetic resonance imaging optimization for auto-calibrated image reconstruction"
- Polimeni, Setsompop, Wald. "United States Patent US10429475B2 Method for increasing signal-to-noise ratio in magnetic resonance imaging using per-voxel noise"
- Setsompop, Bilgic, Wald. "United States Patent US10436866B2 Simultaneous multislice MRI with random gradient encoding"
- Gulani, Griswold, Yang, Jiang, Setsompop. "United States Patent US10598747 System and method for simultaneous multislice magnetic resonance fingerprinting with variable radio frequency encoding"
- Eichner, Setsompop, Wald, Cauley. "United States Patent US10605882 Systems and methods for removing background phase variations in diffusionweighted magnetic resonance imaging"
- Setsompop, Wald, Dong, Guo, Wang, Reese. "United States Patent US10871534 Accelerated magnetic resonance imaging using tilted reconstruction kernel in phase encoded and point spread function encoded k-space"
- Polak, Raithel, Setsompop. "United States Patent US10895622 Noise suppression for wave-CAIPI"
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- Setsompop, Bilgic, Wald, Witzel. "United States Patent US10908248 Systems and methods for slice dithered enhanced resolution simultaneous multislice magnetic resonance imaging"
- Bilgic Setsompop, Polak, Ye, Wald. "United States Patent US11009675 Method for simultaneous time-interleaved multislice magnetic resonance imaging"
- Setsompop, Lawrence, Fuyixue. "United States Patent US11022665 Method for echo planar time-resolved magnetic resonance imaging"
- Polak, Setsompop. "United States Patent US11181598 Multi-contrast MRI image reconstruction using machine learning"
- Splitthoff, Polak, Setsompop, Gagoski. "United States Patent US11249162 Motion corrected blipped CAIPIRINHA and SMS"
- Polak, Setsompop. "United States Patent US11360176 Reconstruction of magnetic-resonance datasets using machine learning"
- Bilgic, Han, Cauley, Wald, Setsompop. "United States Patent US11391803 Multi-shot echo planar imaging through machine learning"
- Polak, Setsompop, Cauley. "United States Patent US11486953 Phase estimation for retrospective motion correction"
- Polak, Setsompop. "United States Patent US20200249301 Reconstruction of Magnetic-Resonance Datasets using Machine Learning"

- Polak, Setsompop. "United States Patent US20200341094 Multi-contrast MRI Imaging Reconstruction using Machine Learning"
- Zelinski, Adalsteinsson, Setsompop, Wald, Fontius. "United States Patent US7336145 Method for designing RF excitation pulses in magnetic resonance tomography"
- Setsompop, Alagappan, Adalsteinsson, Wald. "United States Patent US8076939 Method for Fast Magnetic Resonance Radiofrequency Coil Transmission Profile Mapping"
- Setsompop, Alagappan, Adalsteinsson, Wald. "United States Patent US8076939 Method for Fast Magnetic Resonance Radiofrequency Coil Transmission Profile Mapping."
- Setsompop, Alagappan, Gagoski, Wald, Adalsteinsson. "United States Patent US8085044 Method for producing spectral-spatial parallel RF excitations for magnetic resonance imaging"
- Zelinski, Setsompop, Adalsteinsson, Goyal. "United States Patent US8148985 Method for Reducing Maximum Local Specific Absorption Rate in Magnetic Resonance Imaging"
- Setsompop, Wald. "United States Patent US8405395 Method for Simultaneous Multi-slice Magnetic Resonance Imaging"
- Adalsteinsson, Fautz, Setsompop, Wald. "United States Patent US8866478 Method and processor and magnetic resonance apparatus for designing RF pulses to mitigate off-resonance effects"
- Setsompop, Wald. "United States Patent US8981776 Method for magnetic resonance imaging with controlled aliasing"
- Setsompop, Wald. "United States Patent US9081055 Method for Reducing Local Specific Absorption Rate in Magnetic Resonance Imaging Using Radio Frequency Coil Array Dark Modes"
- Setsompop, Bilgic. "United States Patent US9542763 Systems and methods for fast reconstruction for Quantitative Susceptibility Mapping using Magnetic Resonance Imaging"
- Polimeni, Bhat, Heberlein, Setsompop, Witzel, Cauley. "United States Patent US9588208 Methods, systems and apparatuses for rapid segmented, accelerated, and simultaneous multi-slice echo planar imaging"
- Polimeni, Wald, Setsompop. "United States Patent US9778336 System and method for rapid, multi-shot segmented magnetic resonance imaging"
- Setsompop, Griswold, Ye, Wald, Ma, Jiang. "United States Patent US9897675B2 Magnetic resonance fingerprinting (MRF) with simultaneous multivolume acquisition"
- Cauley, Griswold, Setsompop, Wald. "United States Patent US9964616B2 Fast group matching for magnetic resonance fingerprinting reconstruction"

LINKS

- Setsompop Lab: https://med.stanford.edu/setsompoplab.html

Teaching

COURSES

2025-26

- Medical Imaging Systems II: BMP 269B, EE 369B (Win)

2024-25

- Medical Image Reconstruction: EE 369C (Aut)
- Medical Imaging Systems II: BMP 269B, EE 369B (Win)

2023-24

- Medical Imaging Systems II: BMP 269B, EE 369B (Spr)

2022-23

- Biomedical Signals I: BMP 211, RAD 211 (Aut)
- Medical Imaging Systems II: BMP 269B, EE 369B (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Hong En Chew, Matt McCready, Alex Toews, Mahmut Yurt, Xuetong Zhou

Doctoral Dissertation Advisor (AC)

Daniel Abraham, Jaehyeok Bae, Mengze Gao, Yimeng Lin, Zachary Shah, Yonatan Urman

Doctoral Dissertation Co-Advisor (AC)

Ariel Hannum

Publications

PUBLICATIONS

- **OPTIKS: Optimized Gradient Properties Through Timing in k-Space** *IEEE TRANSACTIONS ON MEDICAL IMAGING*
  McCready, M. A., Cao, X., Setsompop, K., Pauly, J. M., Kerr, A. B.
  2026; 45 (4): 1651-1660
- **Semi-supervision for clinical contrast-weighted image synthesis from magnetic resonance fingerprinting.** *Magma (New York, N.Y.)*
  Yurt, M., Alkan, C., Cao, X., Liao, C., Zhou, Z., Cukur, T., Syed, A., Pauly, J., Vasanawala, S., Setsompop, K.
  2026
- **Accelerating MRI With Longitudinally-Informed Latent Posterior Sampling.** *Magnetic resonance in medicine*
  Urman, Y., Shah, Z., Kumar, A., Soares, B. P., Setsompop, K.
  2026
- **A Dynamic Shim Approach for Correcting Eddy Current Effects in Diffusion-Prepared MRI Acquisition Using a Multi-Coil AC/DC Shim-Array.** *Magnetic resonance in medicine*
  Liao, C., Stockmann, J. P., Li, Z., Wang, Z., Gao, M., Craven-Brightman, L., Sliwiak, M., Biggs, C., Glad, J. A., Zhou, J., Qian, Y., Zhong, Z., Wang, et al
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- **Physics-Informed Implicit Neural Representations for Joint B0 Estimation and Echo Planar Imaging**
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- **In Vivo Meso-Scale Whole-Brain Quantitative Imaging With Tailored MRF on the NexGen 7T Scanner.** *Magnetic resonance in medicine*
  Cao, X., Beckett, A., Liao, C., Walker, E., Zhu, Z., Qian, Y., Gao, M., Wang, N., Lin, Y., Gong, L., McCready, M. A., Wang, Z., Li, et al
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- **Pulsatile Brain Motion as a Marker of Brain Aging and Dementia: Insights from 3D q-aMRI.** *medRxiv : the preprint server for health sciences*
  Terem, I., Younes, K., Weiss, S., Dreisbach, A., Vossler, H., Kwon, E., Cornfeld, D., Wright, J., Condron, P., Poston, K. L., Henderson, V. W., Mormino, E. C., Holdsworth, et al
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- **The Effect of Voxel Volume and Voxel Shape on Cardiac Diffusion Tensor Imaging Metrics** *MAGNETIC RESONANCE IN MEDICINE*
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- **Micron-resolution fiber mapping in histology independent of sample preparation.** *Nature communications*
  Georgiadis, M., Auf der Heiden, F., Abbasi, H., Ettema, L., Nirschl, J., Taghavi, H. M., Wakatsuki, M., Liu, A., Ho, W. H., Carlson, M., Doukas, M., Koppes, S. A., Keereweer, et al
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- **Evaluation of EPI-Based Distortion Correction Techniques for Cardiac Diffusion Tensor Imaging.** *NMR in biomedicine*
  Cork, T. E., Middione, M. J., Loecher, M., Liao, C., Setsompop, K., Ennis, D. B.
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- **Stretched Radial Trajectory Design for Efficient MRI with Enhanced K-Space Coverage and Image Resolution.** *Bioengineering (Basel, Switzerland)*
  Gong, L. S., Zhou, Z., Li, Q., Qian, Y., Yang, Y., Setsompop, K., Li, Z., Cao, X., Liao, C.
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- **An Efficient Algorithm for Spatial-Spectral Partial Volume Compartment Mapping with Applications to Multicomponent Diffusion and Relaxation MRI.** *IEEE transactions on computational imaging*
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- **DM-Net: a physics-model-independent direct mapping approach for calibration-free multi-coil MRI.** *Research square*
  Wu, Y., Alkan, C., Oscanoa, J., Sun, A., Setsompop, K., Syed, A., Ma, Y., Liao, C., Alley, M., Zhang, F., Pauly, J., Vasanawala, S.
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- **Fast and reliable quantitative measures of white matter development with magnetic resonance fingerprinting** *IMAGING NEUROSCIENCE*
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  Schauman, S. S., Iyer, S. S., Sandino, C. M., Yurt, M., Cao, X., Liao, C., Ruengchaijatuporn, N., Chatnuntawech, I., Tong, E., Setsompop, K.
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- **An Efficient Algorithm for Spatial-Spectral Partial Volume Compartment Mapping With Applications to Multicomponent Diffusion and Relaxation MRI** *IEEE TRANSACTIONS ON COMPUTATIONAL IMAGING*
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- **Blip-up blip-down circular EPI (BUDA-cEPI) for distortion-free dMRI with rapid unrolled deep learning reconstruction.** *Magnetic resonance imaging*
  Yarach, U., Chatnuntawech, I., Liao, C., Teerapittayanon, S., Iyer, S. S., Kim, T. H., Haldar, J., Cho, J., Bilgic, B., Hu, Y., Hargreaves, B., Setsompop, K.
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- **Data- and Physics-driven Deep Learning Based Reconstruction for Fast MRI: Fundamentals and Methodologies.** *IEEE reviews in biomedical engineering*
  Huang, J., Wu, Y., Wang, F., Fang, Y., Nan, Y., Alkan, C., Abraham, D., Liao, C., Xu, L., Gao, Z., Wu, W., Zhu, L., Chen, et al
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- **Spherical echo-planar time-resolved imaging (sEPTI) for rapid 3D quantitative T 2 * and susceptibility imaging.** *Magnetic resonance in medicine*
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- **3D Quantitative-Amplified Magnetic Resonance Imaging (3D q-aMRI).** *Bioengineering (Basel, Switzerland)*
  Terem, I., Younes, K., Wang, N., Condron, P., Abderezaei, J., Kumar, H., Vossler, H., Kwon, E., Kurt, M., Mormino, E., Holdsworth, S., Setsompop, K.
  2024; 11 (8)
- **Phase stabilization with motion compensated diffusion weighted imaging.** *Magnetic resonance in medicine*
  Hannum, A. J., Cork, T. E., Setsompop, K., Ennis, D. B.
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- **Uncovering microstructural architecture from histology.** *bioRxiv : the preprint server for biology*
  Georgiadis, M., Auf der Heiden, F., Abbasi, H., Ettema, L., Nirschl, J., Taghavi, H. M., Wakatsuki, M., Liu, A., Ho, W. H., Carlson, M., Doukas, M., Koppes, S. A., Keereweer, et al
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- **Pre-excitation gradients for eddy current nulled convex optimized diffusion encoding (Pre-ENCODE).** *Magnetic resonance in medicine*
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- **Clinical Evaluation of a 2-Minute Ultrafast Brain MR Protocol for Evaluation of Acute Pathology in the Emergency and Inpatient Settings.** *AJNR. American journal of neuroradiology*
  Lang, M., Clifford, B., Lo, W. C., Applewhite, B. P., Tabari, A., Filho, A. L., Hosseini, Z., Longo, M. G., Cauley, S. F., Setsompop, K., Bilgic, B., Feiweier, T., Lev, et al
  2024
- **Improved reconstruction for highly accelerated propeller diffusion 1.5T clinical MRI.** *Magma (New York, N.Y.)*
  Yarach, U., Chatnuntawech, I., Setsompop, K., Suwannasak, A., Angkurawaranon, S., Madla, C., Hanprasertpong, C., Sangpin, P.
  2024
- **The Potential of Phase Constraints for Non-Fourier Radiofrequency-Encoded MRI.** *IEEE transactions on computational imaging*
  Liu, Y., Liao, C., Setsompop, K., Haldar, J. P.
  2024; 10: 223-232
- **Rapid and accurate navigators for motion and B0 tracking using QUEEN: Quantitatively enhanced parameter estimation from navigators.** *Magnetic resonance in medicine*
  Brackenier, Y., Wang, N., Liao, C., Cao, X., Schauman, S., Yurt, M., Cordero-Grande, L., Malik, S. J., Kerr, A., Hajnal, J. V., Setsompop, K.
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- **Polynomial Preconditioners for Regularized Linear Inverse Problems.** *SIAM Journal on Imaging Sciences*
  Iyer, S. S., Ong, F., Cao, X., Liao, C., Daniel, L., Tamir, J. I., Setsompop, K.
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- **The Potential of Phase Constraints for Non-Fourier Radiofrequency-Encoded MRI** *IEEE Transactions on Computational Imaging*
  Liu, Y., Liao, C., Setsompop, K., Haldar, J. P.
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- **High-resolution myelin-water fraction and quantitative relaxation mapping using 3D ViSTa-MR fingerprinting.** *Magnetic resonance in medicine*
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  2023
- **High-resolution myelin-water fraction and quantitative relaxation mapping using 3D ViSTa-MR fingerprinting.** *ArXiv*
  Liao, C., Cao, X., Srinivasan Iyer, S., Schauman, S., Zhou, Z., Yan, X., Chen, Q., Li, Z., Wang, N., Gong, T., Wu, Z., He, H., Zhong, et al
  2023
- **Next-generation MRI scanner designed for ultra-high-resolution human brain imaging at 7 Tesla.** *Nature methods*
  Feinberg, D. A., Beckett, A. J., Vu, A. T., Stockmann, J., Huber, L., Ma, S., Ahn, S., Setsompop, K., Cao, X., Park, S., Liu, C., Wald, L. L., Polimeni, et al
  2023
- **DTI-MR fingerprinting for rapid high-resolution whole-brain T1 , T2 , proton density, ADC, and fractional anisotropy mapping.** *Magnetic resonance in medicine*
  Cao, X., Liao, C., Zhou, Z., Zhong, Z., Li, Z., Dai, E., Iyer, S. S., Hannum, A. J., Yurt, M., Schauman, S., Chen, Q., Wang, N., Wei, et al

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- **Time-efficient, high-resolution 3T whole-brain relaxometry using 3D-QALAS with wave-CAIPI readouts.** *Magnetic resonance in medicine*
  Cho, J., Gagoski, B., Kim, T. H., Wang, F., Manhard, M. K., Dean, D. 3., Kecskemeti, S., Caprihan, A., Lo, W., Splitthoff, D. N., Liu, W., Polak, D., Cauley, et al
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- **High-fidelity mesoscale in-vivo diffusion MRI through gSlider-BUDA and circular EPI with S-LORAKS reconstruction.** *NeuroImage*
  Liao, C., Yarach, U., Cao, X., Iyer, S. S., Wang, N., Kim, T. H., Tian, Q., Bilgic, B., Kerr, A. B., Setsompop, K.
  2023: 120168
- **Deep Learning Initialized Compressed Sensing (Deli-CS) in Volumetric Spatio-Temporal Subspace Reconstruction.** *bioRxiv : the preprint server for biology*
  Iyer, S. S., Schauman, S. S., Sandino, C. M., Yurt, M., Cao, X., Liao, C., Ruengchaijatuporn, N., Chatnuntawech, I., Tong, E., Setsompop, K.
  2023
- **High-resolution motion- and phase-corrected functional MRI at 7 T using shuttered multishot echo-planar imaging.** *Magnetic resonance in medicine*
  Sengupta, S., Berman, A., Polimeni, J. R., Setsompop, K., Grissom, W. A.
  2023
- **Optimal deep brain stimulation sites and networks for stimulation of the fornix in Alzheimer's disease.** *Nature communications*
  Rios, A. S., Oxenford, S., Neudorfer, C., Butenko, K., Li, N., Rajamani, N., Boutet, A., Elias, G. J., Germann, J., Loh, A., Deeb, W., Wang, F., Setsompop, et al
  2022; 13 (1): 7707
- **Validation of a highly accelerated post-contrast wave-controlled aliasing in parallel imaging (CAIPI) 3D-T1 MPRAGE compared to standard 3D-T1 MPRAGE for detection of intracranial enhancing lesions on 3-T MRI.** *European radiology*
  Goncalves Filho, A. L., Awan, K. M., Conklin, J., Ngamsombat, C., Cauley, S. F., Setsompop, K., Liu, W., Splitthoff, D. N., Lo, W., Kirsch, J. E., Schaefer, P. W., Rapalino, O., Huang, et al
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- **Clinical validation of Wave-CAIPI susceptibility-weighted imaging for routine brain MRI at 1.5 T.** *European radiology*
  Conklin, J., Figueiro Longo, M. G., Tabari, A., Lio Goncalves Filho, A., Liu, W., Splitthoff, D. N., Lo, W. C., Cauley, S. F., Setsompop, K., Schaefer, P. W., Kirsch, J. E., Rapalino, O., Huang, et al
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- **Detecting Silent Acute Microinfarcts in Cerebral Small Vessel Disease Using Submillimeter Diffusion-Weighted Magnetic Resonance Imaging: Preliminary Results.** *Stroke*
  Misquitta, K., Daou, M., Conklin, J., Liao, C., Setsompop, K., Poublanc, J., Shirzadi, Z., MacIntosh, B. J., Tomlinson, G., Cohn, M., Aviv, R. I., Silver, F. L., Mandell, et al
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- **Highly accelerated EPI with wave encoding and multi-shot simultaneous multislice imaging.** *Magnetic resonance in medicine*
  Cho, J., Liao, C., Tian, Q., Zhang, Z., Xu, J., Lo, W. C., Poser, B. A., Stenger, V. A., Stockmann, J., Setsompop, K., Bilgic, B.
  2022
- **Motion-corrected 3D-EPTI with efficient 4D navigator acquisition for fast and robust whole-brain quantitative imaging.** *Magnetic resonance in medicine*
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- **Blip up-down acquisition for spin- and gradient-echo imaging (BUDA-SAGE) with self-supervised denoising enables efficient T2 , T2 *, para- and dia-magnetic susceptibility mapping.** *Magnetic resonance in medicine*
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- **SNR-efficient distortion-free diffusion relaxometry imaging using accelerated echo-train shifted echo-planar time-resolving imaging (ACE-EPTI).** *Magnetic resonance in medicine*
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- **Optimized multi-axis spiral projection MR fingerprinting with subspace reconstruction for rapid whole-brain high-isotropic-resolution quantitative imaging.** *Magnetic resonance in medicine*
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  2022: 118958

- **Evaluation of highly accelerated wave controlled aliasing in parallel imaging (Wave-CAIPI) susceptibility-weighted imaging in the non-sedated pediatric setting: a pilot study.** *Pediatric radiology*
  Conklin, J., Tabari, A., Longo, M. G., Cobos, C. J., Setsompop, K., Cauley, S. F., Kirsch, J. E., Huang, S. Y., Rapalino, O., Gee, M. S., Caruso, P. J.
  1800

- **3D Echo Planar Time-resolved Imaging (3D-EPTI) for ultrafast multi-parametric quantitative MRI.** *NeuroImage*
  Wang, F., Dong, Z., Reese, T. G., Rosen, B., Wald, L. L., Setsompop, K.
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  Tian, Q., Fan, Q., Witzel, T., Polackal, M. N., Ohringer, N. A., Ngamsombat, C., Russo, A. W., Machado, N., Brewer, K., Wang, F., Setsompop, K., Polimeni, J. R., Keil, et al
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