List of Potential Nuclear Theory Collaborators - In order to support the experimental program at FRIB right from the start, the FRIB TA Executive Board (TA-EB) has compiled a list of theorists who are willing to provide their expertise to experimental groups. Theorists can contribute to successful proposals and experiments by providing background information, suggesting experts who can address specific questions, and by collaborating directly. In turn, experimentalists can support theorists by incorporating and acknowledging the input, as well as by including them in proposals and collaborative work beyond. All users of the list are expected to use the information therein solely for the purpose of scientific discussion and collaboration. Any concerns should be reported to the Theory Alliance Executive Board.
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Name	Email address	Website	Areas of current interest	Resources (formal, computational, theory networks/collaboration) available	Other areas of expertise	Wish list for experimental data
Alex Brown	brown@nscl.msu.edu	https://people.nscl.msu.edu/~brown/	Structure of sd shell nuclei (Structure includes beta and gamma decay, moments, One and two nucleon spectroscopic factors) Structure in the region of 42Si Structure of pf shell nuclei Structure for Z=28-50 up to N=56 Structure in the regions of 132Sn and 208Pb Rms radii and neutron skins connected to the neutron equation of state Rapid-proton capture rates Level densities from the shell model Structure aspects of double Di-proton decay	Shell-model codes Oxbash and NuShellX		Structure data for the regions of 42Si, 60Ca, and 78Ni Rms charge radii of proton-rich nuclei
Witek Nazarewicz	witek@frib.msu.edu	https://people.nscl.msu.edu/~witek/www/Nazarewicz.htm	Nuclear structure; global properties of nuclei; nuclear collective motion Decay spectroscopy; physics of open systems Large amplitude collective motion; nuclear fission Nuclear input for nuclear astrophysics Uncertainty quantification for nuclear models; Bayesian inference Hyperfine interactions	NUCLEI SCIDAC (http://nuclei.mps.ohio-state.edu) BAND collaboration (https://www.ohio.edu/news/2020/05/ohio-leads-new-3-7-million-projectadvance-nuclear-physics-experiments) Several international collaborations	High performance computing Theory of open quantum systems	Masses, radii, and moments of radioactive nuclei Spin-isospin excitations Multi-particle decays; inter-nucleon correlations Data on superheavy nuclei Data on mirror nuclei Data on neutron-rich nuclei, including beta-decay information
Jutta Escher	escher1@llnl.gov	https://people.llnl.gov/escher1	Improving nuclear structure inputs for nuclear reactions: level densities, gamma-ray strength functions, optical-model potentials Integrating nuclear structure and reaction theory: inelastic scattering and transfer reactions Indirect methods for determining nuclear reaction cross sections for astrophysics and other applications Interplay of statistical and direct reactions, formation, and decay of compound nuclei		Symmetry-based approaches in nuclear structure and reactions	Elastic and inelastic scattering cross sections Decay properties of compound nuclei
Daniel Phillips	phillid1@ohio.edu	https://www.ohio.edu/cas/phillid1	Halo nuclei and quantum universality Bayesian inference Astrophysical reactions for light nuclei; R-matrix theory Neutron-neutron interactions	BAND collaboration (https://bandframework.github.io/) BUQEYE collaboration (https://buqeye.github.io/) Collaboration with several physicists at TU Darmstadt	Electron & photon scattering from light nuclei Effective Field Theory Three-body dynamics Parity violation	Neutron-neutron correlations in the final state Energies, radii, B(E1) strengths of weakly bound s-wave & p-wave states near the driplines
Jorge Piekarewicz	jpiekarewicz@fsu.edu	http://web2.physics.fsu.edu/~piekarewicz/	Neutron-rich matter on heaven and earth; Neutron stars, neutron skins, giant resonances; Covariant density functional theory; Bayesian statistics	Calibration and implementation of unified covariant density functional codes to describe ground-state properties of finite nuclei, their linear (RPA) response, and properties of neutron stars.		Masses of exotic neutron-rich nuclei of relevance to the neutron star crust; Neutron densities and neutron skins of very neutron-rich nuclei to constrain EOS; Electric dipole polarizability along isotopic chains; Charge radii of mirror and exotic nuclei; constraints on the EOS at twice saturation density from heavy-ion collisions of highly asymmetric nuclei
Kevin Fossez	fossez@nscl.msu.edu	https://kevinfossez.github.io/	Nuclear structure including the continuum (ab initio, shell model); Halo structures, two-neutron/proton decay, many-body resonances. Collective motion.	NUCLEI collaboration; (Ab initio) Gamow shell model (GSM), density matrix renormalization group (DMRG) method, In-medium similarity renormalization group (IMSRG), particle-plus-rotor model.	High-performance computing. Shell model interactions. Radiative capture reactions, alpha clustering.	Energies and spin-parity at the drip lines in the sdfp region. Decay widths and decay channels. Beta-decay spectroscopy of proton-rich nuclei.
Filomena Nunes	nunes@frib.msu.edu	https://fimmnunes.wixsite.com/mysite	direct nuclear reactions, few-body methods for reactions, optical potential, uncertainty quantification in reactions		Halo nuclei and few-body models for halos	systematic study of elastic on several isotopic chains. simultaneous measurement of breakup and elastic. transfer measurements on neutron rich heavy nuclei
Dean Lee	leed@frib.msu.edu	https://leedeanj.wixsite.com/leegroup	nuclear clustering, forces, structure, thermodynamics, liquid-gas transition, equation of state, superfluid pairing, microscopic calculations	NUCLEI collaboration Nuclear Lattice EFT Collaboration	Quantum computing Machine learning	Cluster states, nuclear correlations, multifragmentation distributions
Jon Engel	engelj@physics.unc.edu https://physics.unc.edu/engelj/	http://www.physics.unc.edu/~engelj/	Fundamental symmetries in nuclei: double-beta decay, atomic electric dipole moments. Nuclear astrophysics: weak interactions in nucleosynthesis, r process. Nuclear structure: density-functional theory, in-medium generator-coordinate method.	DBD Topical Theory Collaboration NUCLEI collaboration	Group theoory in nuclear physics	Beta-decay spectroscopy Strength distributions for forbidden/retarded operators
Amy Lovell	lovell@lanl.gov		Uncertainty quantification for reaction theory Correlations in prompt and delayed fission observables Optical potential Machine learning to supplement data/theory	CSEWG CGMF (Monte Carlo correlated fission code)	few-body models direct reactions	correlated prompt fission observables systematic study of scattering on isotopic chains
Kristina Launey	klauney@lsu.edu	https://www.lsu.edu/physics/people/faculty/launey.php	Structure of nuclei (ab initio up to about mass 50):energy spectra, rms radii, B(E2) with no effective charge, moments, densities, sum rules; collectivity and clustering; shapes, shape co-existence Decays: beta, gamma, GT transitions, charge-exchange densities, decay widths Reactions: cross sections for proton and neutron scattering, p capture, n capture, alpha capture, spectroscopic factors Nuclear astrophysics: narrow resonance reaction rates and alpha widths	Symmetry-adapted codes with SU(3) and symplectic bases (LSU3shell: https://sourceforge.net/projects/lsu3shell/)	Optical potentials from first principles	Binding energies, energy spectra, and B(E2) for proton-rich and neutron-rich nuclei, including Ne, Mg, Ca isotopes
Chloë Hebborn	hebborn@frib.msu.edu		Coulomb and nuclear-dominated breakup reactions one-neutron knockout reactions Ab initio NCSM/RGM and NCSMC calculations		halo nuclei	Neutron knockout of halo nuclei Coulomb breakup of halo nuclei
Saori Pastore	saori@wustl.edu		electroweak properties of nuclei, electromagnetic and weak decays, electron and neutrino scattering, nuclear structure, many-body electroweak currents, neutrinoless doble beta decay, BSM with beta decay, BSM with nuclei	variational and green's function Monte Carlo methods		
Christian Drischler	drischler@frib.msu.edu		nuclear-matter equation of state neutron stars chiral effective field theory many-body perturbation theory Bayesian methods for uncertainty quantification,	BUQEYE collaboration N3AS collaboration	High-performance computing	Masses and neutron skins of neutron-rich nuclei High-density constraints on the nuclear EOS

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Maria Piarulli	mpiarulli@physics.wustl.edu		nuclear interactions, nuclear structure, electroweak transitions, BSM with nuclei, infinite nucleonic matter, uncertainty quantification, Bayesian methods	Quantum Monte Carlo INCITE, ALCC, LCRC		
Sebastian Koenig	skoenig@ncsu.edu	https://skoenig.wordpress.ncsu.edu	Structure and interactions of nuclear few-body systems Nuclear effective field theories Resonances Eigenvector continuation Quantum universality	Collection of few-body bound-state codes (inc. Faddeev, Faddeev-Yakubowsky, DVR) N-d scattering code Several international collaborations	High-performance computing Functional programming	Asymptotic normalization coefficients Low-energy scattering parameters for cluster systems
Calvin Johnson	cjohnson@sdsu.edu	http://sci.sdsu.edu/johnson/	Nuclear shell model; Hartree-Fock, RPA, projected Hartree-Fock, and generator coordinate in a shell model basis. EM and weak transitions. Empirical and no-core shell model. Dark matter detection and neutrinoless double-beta decay. Quantum computing and nuclear theory.	Shell model code BIGSTICK and postprocessing codes. Codes for HF, RPA, PHF, GCM in a shell model basis. NERSC time. Topical group on fundamental symmetries	High performance computing	Energy spectra and EM, beta decay rates.
Lucas Platter	lplatter@utk.edu	http://web.utk.edu/~lplatter/index.html	Effective field theories, halo nuclei, weak decays, capture reactions, fundamental symmetries	Few-body codes, capture codes	atomic physics	weak decays into the continuum, ANCs, capture rates, etc,
Veronica Dexheimer	vdexheim@kent.edu	https://www.kent.edu/physics/profile/veronica-dexheimer	Equation of state for dense and hot matter; hyperons, quarks, and magnetic fields in neutron stars	PHAROS		compressibility, symmetry energy, and hyperon optical potentials
Jiangming Yao	yaoj@frib.msu.edu yao.jiangming@gmail.com	https://scholar.google.com/citations?user=x4EtN9kAAAAJ&hl=en	Low-lying collective (quadrupole, octupole) excitations of medium-mass and heavy nuclei, shape transition/coexistence, nuclear weak decays, BSM physics, EOS at high density, multi-reference DFT, GCM, MR-IMSRG, etc	GCM codes based on either relativistic EDFs or any nuclear Hamiltonians (from chiral EFT)	hypernuclei	energy spectra, electric multipole transition strengths
Baishan Hu	bhu@triumf.ca	https://www.triumf.ca/node/32817/	Ab initio calculations with resonance and continuum (Gamow VS-IMSRG and NCGSM, dripline nuclei); VS-IMSRG calculations from light to heavy nuclei (spectra, radii, EM and weak transitions); Ab initio nuclear calculation for BSM; EOM-IMSRG for giant resonances (dipole polarizability, nuclear multipole resonances, GT resonances, neutron skin, nuclear matter).	Gamow VS-IMSRG; VS-IMSRG; EOM-IMSRG;	High-performance computing; Ab initio nuclear equation of state; Symmetry energy	Ab initio calculation with continnum for dripline nuclei; Neutron-skin and dipole polarizability; Spectra, radii, EM and weak transitions; Halo nuclei.
Willem Dickhoff	wimd@wuphys.wustl.edu	https://web.physics.wustl.edu/~wimd/	Quenching of single-particle strength; simultaneous description of reactions and structure; neutron skin and neutron stars; dispersive optical model; improved description of transfer reactions; (p,pN) reaction description; charge and matter distributions in exotic nuclei	Textbook; Many-body theory exposed!	Ab initio theory of equation of state and pairing correlations in neutron stars	Dripline in Ca isotopes; neutron skin results consistent with PREX-II anc CREX; further experiments shedding light on discrepancy between transfer reactions and knockout experiments for single-particle removal probabilities
Ingo Tews	itews@lanl.gov		Quantum Monte Carlo calculations of nuclei and matter, nuclear matter and symmetry energy, neutron stars and neutron-star equation of state, multimessenger analyses of neutron-star observations, chiral effective field theory, construction of local chiral EFT forces	Quantum Monte Carlo code (AFDMC), Bayesian analyis framework for multimessenger observations of neutron stars	high-performance computing	symmetry energy and heavy-ion collodion constraints on the equation of state, neutron-skin thickness
Chrysovalantis Constantinou	cconsta1@alumni.nd.edu		Ab initio nucleat theory, shell model, no-core configuration interaction calculations	Many-body theory, nuclear shell model, writing and running code	Web development, machine learning	Scattering data fitting to models?
Cole D. Pruitt	pruitt9@llnl.gov	https://people.llnl.gov/pruitt9	Optical model development Uncertainty quantification for nuclear reactions Single-nucleon elastic and inelastic scattering Deep Neural Networks (DNNs) for experimental partical identification (PID) at RIB facilities	Dispersive Optical Model (DOM) code (actively under development)	Markov Chain Monte Carlo for uncertainty quantification	Single-nucleon differential and integral cross sections (especially inelastic) from 5-200 MeV on neutron-rich isotopic chains, e.g., proton elastic and reaction cross sections on Ni64-78, Ca48-Ca60, Sn124-Sn140 RMS charge radii for short-lived, even-even, neutron-rich isotopes of well-studied isotopic chains (e.g., Ca, Ni, Zr, Sn) Transfer and single-nucleon knockout reactions on neutron-rich nuclei
Gregory Potel	potelaguilar1@llnl.gov		One and two nuceon transfer reactions, neutron capture. Microscopic optical potentials, integration of structure and reactions. Dipole resonances in stable and exotic nuclei. Nuclear Josephson effect.	Own multi-purpose reaction code.		Two-neutron transfer reactions in light neutron-rich nuclei (9Li, 12Be). One-neutron transfer in neutron-rich Ca isotopes (52,53 Ca). (d,p\gamma) reactions in nuclei of astrophysical interest.
G. Wendell Misch	wendell@lanl.gov, wendell.misch@gmail.com		Nuclear astrophysics; nuclear isomers; EM and weak transitions (charge-changing and neutral current); neutrino spectra; nuclear shell model	Own codes, including isomer thermal transitions and weak strength -> neutrino spectra. LANL HPC.	Astrophysics	Excited state energies, spins/parities, lifetimes, and gamma intensities. Isomer feeding factors. Weak interaction strengths.
Gerald Miller	miller@uw.edu	http://faculty.washington.edu/miller/	Nuclear reactions, effects of short-ranged correlations, BSM			
Hao Tran	tvnhao@hueuni.edu.vn	https://sites.google.com/a/hueuni.edu.vn/t-v-nhan-hao/	Nuclear structure, Direct nuclear reactions, Faddeev-AGS equations, microscopic optical potential	even-even HF+BCS, odd-even HF+BCS, HTDA, Skyrme RPA, Particle Vibration Coupling, Microscopic optical Potential, Faddeev-AGS code for (p,d) and (d, p) reactions		(d,p) reactions at energies below 50 MeV, nuclear structure of exotic nuclei
Kyle Godbey	me@kyle.ee, kyle@tamu.edu	https://kyle.ee	Many-body dynamics, low-energy reactions (fusion, multinucleon transfer, quasifission, etc.), dynamical studies of fission, applications	Developer of/access to multiple TDDFT software packages, computational resources available	High-performance computing applications and porting	Sub-barrier fusion cross sections for neutron-rich nuclei
Ragnar Stroberg	ragnarstroberg@gmail.com		Ab initio nuclear structure, shell model, spectroscopy, radii, electroweak observables, BSM, quenching of spectroscopic strength in direct reactions	IMSRG code: https://github.com/ragnarstroberg/imsrg		charge radii of neutron-rich oxygen isotopes, strong GT transitions (e.g. Sn100)
Simin Wang	wangs@nscl.msu.edu		Nuclear structure; exotic decay modes (proton/neturon, 2p/2n, alpha decays); Spectroscopy.	Gamow coupled-channel (GCC) method for three-body systems; Time-dependent approach for 2p/2n decays	Open quantum systems; Few-body (halo/cluster) structure	Multi-particle emission; inter-nucleon correlation; spectroscopy and decay properties of mirror nuclei
Thomas Papenbrock	tpapenbr@utk.edu	http://volweb.utk.edu/~tpapenbr/	effective field theories for heavy nuclei and collective phenomena; ab initio computations			
Sait Umar	sait.a.umar@gmail.com	https://scholar.google.com/citations?user=rfGvaR0AAAAJ&hl=en	Application of TDDFT to low-energy heavy-ion reactions, fusion, quasifission, superheavy element reactions, multi-nucleon transfer.	In house VU-TDHF code and published Sky3D		
Baha Balantekin	baha@physics.wisc.edu		Nuclear astrophysics, neutrinos and fundamental symmetries, weak interactions in nuclei, subbarier fusion, algebraic models of nuclear structure		Quantum information science	
Jeff Tostevin	j.tostevin@surrey.ac.uk	http://nucleartheory.eps.surrey.ac.uk/NPG/	Low and intermediate energy reactions for spectroscopic applications. Few body and semi-classical methods. Nuclear structure and reactions interface.			
Matthew Mumpower	mumpower@lanl.gov	https://matthewmumpower.com	Nuclear structure & reactions (especially for neutron-rich nuclei), fission, isomers, bayesian inference, machine learning, nuclear astrophysics, nuclear reaction networks, sensitivity studies, uncertainty propagation	FIRE (Fission In R-process Elements) JINA, & IReNA, collaborations; FRDM / FRLDM, QRPA+HF, HF, & fission yield codes, PRISM (Portable Routines for Integrated nucleoSynthesis Modeling) nuclear reaction network	Astrophysics, r-process, kilonova, HPC, machine learning, web development, relation databases	Masses, beta-decay (rates, probabilities, strength, spectra), fission yields, properties of superheavies

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Vladimir Zelevinsky	zelevins@frib.msu.edu		Nuclear structure, collective motion as a function of energy and spin, phase transitions, continuum shell model, level density, quantum chaos, weak interactions, nuclear EDM, clusters in nuclei			
Nicole Vassh	nvassh@nd.edu	https://physics.nd.edu/people/postdocs-visiting-scholars-visiting-students/	r-process and i-process nucleosynthesis, neutron star merger abundances and EM counterparts, signatures of fission in astrophysical environments, Markov Chain Monte Carlo and machine learning methods	Notre Dame CRC and Argonne LCRC, FIRE (Fission in R-process Elements) collaboration, N3AS collaboration, JINA, NuGRID, PRISM		masses of neutron-rich rare-earth nuclei, beta-decay rates near N=126, half-lives and branching ratios of n-rich actinides just outside current data
Emanuel V. Chimanski	chimanski1@llnl.gov	https://sites.google.com/view/evchimanski/	Inelastic and elastic scattering in general. Combining sophisticated nuclear structure models (QRPA and RPA) to nuclear reactions. Coupled Channels and DWBA. Quantum formalism of nuclear reactions, preequilibrium emissions and projectile breakup.		Cross sections for Astrophysics and technological applications. Statistical assumptions and simplification of complex structure/reaction models allowing fast calculations.	Inelastic and Elastic data. Breakup of weakly bound projectiles.
Sofia Karampagia	karampso@gvsu.edu		level densities of sd, pf, Z=28-50, A=56-100 and Z=50-82, A=100-164 nuclei	moments method shell model level density		
Heiko Hergert	hergert@frib.msu.edu		Ab initio nuclear structure (and reactions), confronting systematic trends from ab initio calculations with phenomenological models and experiment, In-Medium SRG and other RG approaches for many-body theory, IMSRG-hybrid methods (Shell Model / VS-IMSRG, IM-GCM, IM-NCSM, etc.), emergent symmetries, neutrinoless DBD and BSM physics	(MR-)IMSRG and IMSRG hybrid method calculations, NUCLEI collaboration	High-performance computing	observables along isotopic and isotonic chain, branching out form semi-magic isotopes: separation energies, charge radii, low-lying excitations & transitions
Anatoli Afanasjev	Anatoli.Afanasjev@gmail.com	https://www.physics.msstate.edu/about/faculty-staff/faculty/anatoli-afanasjev/	Covariant density functional theory; nuclear structure; global properties of nuclei; ground and excited states; charge radii; nuclear collective motion; nuclear fission; rotating nuclei; nuclear input for nuclear astrophysics; assesment of theoretical uncertainties in covariant density functional theory; nuclear clsutering; superheavy nuclei	various covariant density functional computer codes	High-performance computing	Masses, charge radii, deformations and single-particle properties of radioactive nuclei; data on superheavy nuclei; data on rotating neutron- and proton-rich nuclei
Trevor Sprouse	tmsprouse@lanl.gov		Nuclear structure & reactions (especially for neutron-rich nuclei), fission, isomers, bayesian inference, machine learning, nuclear astrophysics, nuclear reaction networks, sensitivity studies, uncertainty propagation	FIRE (Fission In R-process Elements), FRDM / FRLDM, QRPA+HF, HF, & fission yield codes, PRISM (Portable Routines for Integrated nucleoSynthesis Modeling) nuclear reaction network	Astrophysics, r-process, kilonova, HPC, machine learning,	Masses, beta-decay (rates, probabilities, strength, spectra), fission yields, properties of superheavies