PARALLEL SESSIONS

DURATION OF PRESENTATIONS:

- **Presenter’s name in bold face:** 20+5 mins
- **Contributed:** 15+4 mins

ROOM ASSIGNED TO SESSION – see Programme Plenary-Parallel sessions

ABSTRACTS online at: [https://fb22-caen.sciencesconf.org/resource/page/id/2](https://fb22-caen.sciencesconf.org/resource/page/id/2)

**Few-body aspects of atomic and molecular physics**  [FB_A&M]

Session 1  *Chair: R. Kezerashvili*
J-P. Karr  Accurate solutions of the three-body Coulomb problem, and applications to molecular QED
E. Kolganova  Van der Waals three-body systems, potentialities for Efimov state observations
- Ultracold three-body rare gas atomic clusters  A. Korobitsin
- Three-electron bound states in conventional superconductors  A. Sanaye
- Analytic model of a multi-electron atom  O. Skoromnik
- Energy spectra of excitons in square quantum wells  S. Yakovlev

Session 2  *Chair: A. Cassimi*
A. Mery  Fragmentation dynamics of atomic and molecular dimers
- Electron impact ionization of molecules for different momentum transfers  L.U. Ancarani
- Discrete scaling and scattering properties from atom-dimer collision  L. Tomio
- Formation of few-electron complexes  H. Klar

Session 3  *Chair: Y. Nagashima*
A. Browaeys  Experimental many-body physics using arrays of individual atoms
L. Liu  Building single molecules - collisions and reactions of two atoms
- Low-dimensional few-body processes in confined geometry of atomic and hybrid atom-ion traps  V. Melezhik
- Three two-species fermions with contact interactions  A. Malykh

Session 4  *Chair: E. Kolganova*
B. Zhu  Exploring few- and many-body physics with an ultracold Bose-Fermi mixture of a large mass imbalance
- Probing three-body collisions induced by a charge impurity in an ultracold gas  H. da Silva Jr
- Few-body interactions in a cold Rydberg gas  P. Cheinet
- Potential splitting approach for atomic and molecular systems  E. Yarevsky

Session 5  *Chair: A. Kievsky*
M. Safronova  Relativistic high-precision methodologies for atomic calculations
Y. Nagashima  Positronium negative ions: the simplest three body state composed of a positron and two electrons
- A three-body system in two dimensions  M. Zimmermann
- Trions in three-, two- and one-dimensional materials  R. Kezerashvili
Hadron physics and related high-energy physics  

Session 1  
Chair: S. Bacca  
T. Peña  
Relativity in few-hadron systems: analysis of baryon electromagnetic transition form factors in the covariant spectator theory  
- Masses and structure of heavy quarkonia and heavy-light mesons in a relativistic quark model in Minkowski space  
  A. Stadler  
- On the inversion of the Nakanishi integral representation for relativistic bound state problems in Minkowski space  
  T. Frederico  
- Relativistic effects in non-relativistic calculations of electroweak cross sections  
  G. Orlandini  
- Bethe-Salpeter approach to three-body bound states with zero-range interaction  
  E. Ydrefors  
- Relativistic Faddeev calculation for N-d scattering with Kharkov potential  
  H. Kamada

Session 2  
Chair: Yuanning Gao  
H.-C. Kim  
Excited Omega_cs as heavy pentaquarks  
- Pion-cloud contribution to the N → Δ transition form factors  
  J.-H. Jung  
- Pion effects in N and Δ masses and strong form factors  
  W. Plessas  
- Mesons studies with a contact interaction  
  M.A. Bedolla

Session 3  
Chair: T. Peña  
C. Lorcé  
The origin of the nucleon mass  
- Energy-momentum tensor for unpolarized proton target  
  A. Trawiński  
- The pion as a tool for discovering new physics  
  L. Doria  
- The pseudoscalar glueball puzzle  
  Q. Zhao  
- Light hadron spectroscopy at BESIII  
  F. De Mori  
- Meson-baryon scattering in extend-on-mass-shell scheme at O(p³)  
  J. Lu

Session 4.  
Chair: W. Plessas  
M. Doering  
Baryon resonances with dynamical coupled channels theory  
- Narrow resonance N*(1685) and eta photoproduction  
  J.M. Suh  
- Description of the Zc exotic states in a quark model coupled-channels calculation  
  F. Fernandez  
- $\pi J/\psi D\bar{D}^*$ potential described by the quark exchange diagram  
  Y. Yamaguchi  
- Exotic quantum states for charmed baryons at finite temperature  
  P. Zhuang  
- Few-body methods and results for hadrons in-medium  
  Y. Liu

Session 5  
Chair: A. Valcarce  
G. Montaña  
A meson-baryon molecular interpretation for some Ω_c^0 excited states  
- Hidden-charm and bottom meson-baryon molecules coupled with five-quark states  
  A. Giachino  
- Threshold effects and the line shape of the X(3872) in EFT  
  M. Schmidt  
- Study of dibaryon resonances via coherent double neutral-meson scattering photoproduction from the deuteron  
  T. Ishikawa

Session 6  
Chair: H. Moutarde  
M. Defurne  
Accessing the generalized parton distributions in the valence region at Jefferson Lab  
C. Mezrag  
Parton distribution amplitudes: revealing diquarks in the proton and Roper resonance  
W. de Paula  
Pion valence momentum distributions: response to massive effective gluons  
- Poincare’ covariant light-front spectral function and transverse momentum distributions  
  E. Pace
**Strange and exotic matter including hypernuclear physics  [FB_Exotic]**

**Session 1**  
Chair: G. Salme

E. Liénard  
Probing the Standard Model with beta-decay experiments
- Zero-range EFT for resonant wino dark matter  
  E. Braaten
- Time-reversal violation in two and three nucleon systems  
  A. Gnech
- Few nucleon experiments in the hadronic weak interaction  
  J. Fry

**Session 2.**  
Chair: J. Haidenbauer

Ch. Rappold  
Hypernuclear spectroscopy with heavy ion beams: the present status and the perspective
- Hyperon and hypernuclear physics with PANDA at FAIR  
  K. Schoenning
- Production of hypernuclei and strange particles in spallation reactions at a few GeV using an intranuclear cascade approach  
  J.-Ch. David
- Search for the eta-mesic helium in proton-deuteron and deuteron-deuteron reactions  
  M. Skurzok
- Studies of the $\bar{K}NN\Lambda$ bound state via the exclusive analysis of the in-flight $(K^-, n)$ reaction at J-PARC  
  T. Yamaga
- Quasi-bound state in the $\bar{K}NN\Lambda$ system  
  N. Shevchenko

**Session 3.**  
Chair: J. McGovern

J. Haidenbauer  
Baryon-baryon interaction in chiral EFT
- $\Lambda^5\Lambda$ from short range effective theory  
  L. Contessi
- Construction of a local $K\bar{N}\pi\Sigma\pi\Lambda$ potential and composition of the $\Lambda(1405)$  
  T. Hyodo
- Are the chiral based $\bar{K}N\Lambda$ potentials really energy-dependent?  
  J. Revai

**Session 4**  
Chair: E. Hiyama

J. Kuboś  
Studies of hyperon production in HADES
- Kaonic Deuterium precision measurement at DAFNE: the SIDDHARTA-2 experiment  
  M. Miliucci
- In-medium properties of SU(3) baryons  
  K. Hong
- Universal physics of two neutrons and one flavored meson in pionless effective theory  
  U. Raha

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**Few-body methods in nuclear physics and astrophysics + Few-nucleon systems including QCD inspired approaches  [FB_Nucl&QCD]**

**Session 1**  
Chair: R. Kanungo

P. Descouvemo  
Four-body effects in nucleus-nucleus scattering
- Astrophysical $S$-factor of the direct $\alpha(d, \gamma)\Lambda^6$Li capture reaction in a three-body model  
  D. Baye
- Direct measurement of the $^{13}\text{C}(\alpha, n)^{16}\text{O}$ reaction at LUNA  
  G.F. Ciani
- A new measurement of the $^3\text{He}(p, \gamma)^4\text{He}$ cross section in the BBN energy range at LUNA  
  F. Cavanna
- $S$-factor and scattering-parameters from $^3\text{He}(\alpha, \gamma)$ data  
  D. Phillips
- Observation of new neutron resonances in $^{17,19}\text{C}$  
  Y. Sato
Session 2  
Chair: M. Hussein

J. Rotureau  Combining structure and reactions: construction of microscopic optical potentials
- Ab initio folding potentials for proton-nucleus scattering based on NCSM nonlocal one-body densities  Ch. Elster
- Description of scattering reactions of deuteron projectiles using the Gamow Shell Model with the Resonating Group Method  N. Michel
- A new ab initio approach for nuclear reactions based on the symmetry-adapted NCSM  A. Mercenne
- Polarisabilities from Compton scattering on $^3$He and beyond  H. Grieshammer
- Three-body approach to deuteron-α scattering and bound state using realistic forces in a separable or non-separable representation  L. Hlophe

Session 3  
Chair: U. van Kolck

Y. Ikeda  Hadron interactions from lattice QCD - application to hadron resonances
T. Yamazaki  Relation between scattering amplitude and Bethe-Salpeter wave function inside interaction range
E. Berkowitz  Towards grounding nuclear physics in QCD
K. Hadjiyiannakou  Nucleon structure from LQCD
- Dibaryon candidates in decupelet baryons from lattice QCD  S. Gongyo

Session 4  
Chair: L. Grigorenko

O. Sorlin  Evolution of neutron correlations when reaching the drip line
- Exploring the p-n interaction close to the drip-line in the fluorine isotopic chain  A. Revel
- The first unbound states in the A=9 mirror nuclei $^9$B and $^9$Be  M. Odsuren
- Structure of Beryllium isotopes beyond the neutron dripline  B. Monteagudo
- Glauber model analysis for the $^{12}$C nuclear radius  W. Horiuchi
- Nuclear short-range correlations - the contact relations  R. Weiss

Session 5  
Chair: I. Ciepal

I. Mardor  Components of polarization-transfer to a bound proton in a deuteron measured by quasi-elastic scattering
- Measurement of $^3$He analyzing power for p-$^3$He elastic scattering at 70 MeV  A. Watanabe
- Complete set of deuteron analyzing powers for d-p elastic scattering at 70--300 MeV/nucleon and three-nucleon forces  K. Sekiguchi
- Three-nucleon force studies in p-d break-up reaction with BINA at 190 MeV  M. Mohammadi-Dadkan
- Differential cross section for deuteron breakup in collision with proton - measurements at intermediate energies  E. Stephan
- Study of three-nucleon dynamics in the d-p breakup collisions using the WASA detector  B. Klos

Session 6  
Chair: A. Deltuva

S. Shimoura  Tetra-neutron system populated by RI-beam induced reactions
Z. Yang  Study of multineutron systems with SAMURAI
- Five-nucleon systems with an Hyperspherical Harmonics Method  J. Dohet-Eraly
- High-precision nucleon-nucleon potentials from chiral EFT  P. Reinert

Session 7  
Chair: N. Timofeyuk

Ch. Greene  Adiabatic hyperspherical picture of 3n and 4n states
E. Hiyama  Structure of tetra neutron system
M. Viviani  Four-body continuum with 3N-forces
A. Shirokov  Tetra-neutron resonance in the single-state HORSE approach
- Few neutron resonances from chiral EFT  Ph. Klos
Session 8  
**Chair: P. Descouvemont**

A. Volya  Microscopic studies of α clustering in light nuclei
- Depolarization ratio of γ rays as a tool to untangle the shape of α-clustered nuclei  L. Fortunato
- Tensor correlations in α clustering studied with antisymmetrized quasi cluster model  Y. Kanada-En’yo
- Elastic α-12C scattering at low energies with the bound states of 16O in EFT  S.-I. Ando
- Investigating 16O above the 4α breakup threshold  J.A. Swartz
- Background free measurement of the γ-decay of the 17.64MeV (1−) state in 8Be  H.O.U. Fynbo

Session 9  
**Chair: W. Nazarewicz**

Y. Kondo  Experimental studies of unbound neutron-rich nuclei
- Theoretical studies of few-body phenomena in light exotic nuclei  L. Grigorenko
- Search for dineutron correlation in borromean halo nuclei  A. Corsi
- Nuclear reaction near the three-body thresholds  S. Oryu
- Two-nucleon emitters within a pseudostate approach  J. Casal
- Boron isotopes at the dripline: the 19B case  J. Gibelin

Session 10  
**Chair: A. Shirokov**

G. Hupin  p-shell structure through the looking-glass of ab initio transfer reactions
- Properties of light lattice nuclei from EFT  N. Barnea
- How to use renormalization group analysis in lattice nuclear EFT  K. Harada
- Low-energy QCD research at TUNL  C. Howell
- Ab initio calculations for p-shell nuclei with Daejeon16  Y. Kim
- Single-state HORSE method for description of resonant states within the nuclear shell model  A. Mazur

Session 11  
**Chair: M. Viviani**

Y. Maeda  Experimental analysis of few-body physics

H. Witała  Three-nucleon continuum reactions with semilocal coordinate-space regularized chiral forces
- Few-nucleon system dynamics studied via deuteron-deuteron collisions at 160 MeV  I. Ciepał
- Measurement for p–3He elastic scattering with a 65 MeV polarised proton beam  S. Nakai

Session 12  
**Chair: Ch. Elster**

A. Deltuva  Collisions in few-neutron systems

M. Hussein  Inclusive breakup reaction of a two-fragment projectile on a two-fragment target: A genuine four-body problem
- Three-nucleon force contribution to the distorted-wave theory of (d,p) reactions  N. Timofeyuk
- Cluster configuration effects in elastic scattering of light proton and neutron-rich nuclei  V. Guimaraes

Session 13  
**Chair: E. Piasetzky**

M. Mihovilovic  Electron scattering experiment on light systems

S. Bacca  Electromagnetic sum rules in light nuclei
- Approximate sum rule for the electric dipole moment of light nuclei  N. Yamanaka
- Momentum distributions and short-range correlations in 3He with chiral potentials  L.E. Marcucci
**Interdisciplinary aspects of few-body physics and techniques**

**Session 1**  
Chair: M. Gattobigio  
P. Naidon  
- Tetramers of 2+2 bosons  
- Universality and the Coulomb interaction  
  Ch. Schmickler  
- Universality in few-body systems  
  P. Stipanović  
- Universal relations for heteronuclear few-body systems  
  L. Platter  
- Universal Phillips lines for identical bosons and particles of different masses  
  V. Roudnev  
- Fate of the neutron-deuteron virtual state as an Efimov level  
  G. Rupak

**Session 2**  
Chair: M. Lekala  
A. Kievsky  
- Bosonic drops with two- and three-body interactions close to the unitary limit  
- The problem of cluster separability in relativistic few-body systems  
  W. Schweiger  
- Asymmetric regularization and the universal character of the $^4$He spectrum  
  J. Kirsch  
- A simple tool to study many-body forces  
  C. Semay

**Session 3**  
Chair: R. Pohl  
Chen Ji  
- Ab initio calculation of nuclear-structure effects in muonic atoms  
- Some new ideas for the proton radius puzzle  
  Ch. Allton  
- The deuteron-radius puzzle is alive: a new analysis based on chiral EFT theory  
  O.J. Hernandez  
- Dipole-dipole dispersion interactions between neutrons  
  R. Higa

**Session 4**  
Chair: D. Baye  
W. Polyzou  
- Scattering using real-time path integrals  
- Complex-range Gaussians as a basis for treatment of charged particle scattering  
  O. Rubtsova  
- Hyperspherical Harmonics Method with particle excitation degrees of freedom  
  W. Leidemann  
- Conformality lost in Efimov Physics  
  A. Mohapatra  
- Neutron matter in the unitary limit with implicit renormalization of short range interactions  
  V. Timoteo  
- Transition exponent and condensate fluctuation of mesoscopic Bose-Einstein condensate in  
  anharmonic trap  
  M. Lekala