

# The CBM Collaboration

## [Aligarh, India, Department of Physics, Aligarh Muslim University](#)

N. Ahmad, M.D. Azmi, M.M. Khan, A.K. Sharma, Anju Sharma

## [Beijing, China, Department of Engineering Physics, Tsinghua University](#)

Zhi Deng, Dong Han, Yuanjing Li, Kai Sun, Botan Wang, Yi Wang, Xianglei Zhu

## [Berlin, Germany, Zuse Institute Berlin \(ZIB\)](#)

A. Reinefeld, F. Schintke

## [Bhubaneswar, India, Institute of Physics](#)

B. Mallick, P.K. Sahu, S.K. Sahu

## [Bhubaneswar, India, National Institute of Science Education and Research \(NISER\)](#)

V.K.S. Kashyap, B. Mohanty, R. Singh

## [Bochum, Germany, Institut für Experimentalphysik I, Ruhr-Universität Bochum](#)

F. Goldenbaum<sup>1,11</sup>, D. Grzonka<sup>2</sup>, J. Ritman<sup>2,11</sup>, T. Stockmanns<sup>11</sup>, Huagen Xu<sup>11</sup>

## [Bucharest, Romania, Horia Hulubei National Institute of Physics and Nuclear Engineering \(IFIN-HH\)](#)

A. Bercuci, D.I. Dorobantu, M. Petriș, M. Petrovici, L. Radulescu, C. Schiaua

## [Bucharest, Romania, Atomic and Nuclear Physics Department, University of Bucharest](#)

V.A. Bâsceanu, M. Călin, D.-A. Deară, A. Jipa, I. Lazanu, O. Ristea

## [Budapest, Hungary, Eötvös Loránd University \(ELTE\)](#)

M. Csanád

## [Budapest, Hungary, Institute for Particle and Nuclear Physics, Wigner Research Centre for Physics, Hungarian Academy of Sciences](#)

G. Balassa, Gy. Wolf

## [Chandigarh, India, Department of Physics, Panjab University](#)

L. Kumar

## [Chongqing, China, Chongqing University](#)

Liang-ming Pan, Qiqi Wu, Wenxiong Zhou

## [Darmstadt, Germany, Facility for Antiproton and Ion Research in Europe GmbH \(FAIR\)](#)

E. Clerkin, J. Eschke<sup>2</sup>, P. Gasik<sup>2</sup>, O. Keller, P.-A. Loizeau, A. Rost<sup>3</sup>, K. Schünemann<sup>2</sup>, A. Senger, P. Senger<sup>4</sup>, D. Smith

## [Darmstadt, Germany, GSI Helmholtzzentrum für Schwerionenforschung GmbH \(GSI\)](#)

M. Al-Turany<sup>12</sup>, D. Bertini, O. Bertini, L.M. Collazo Sánchez<sup>4</sup>, P. Dahm, H. Darwish<sup>4</sup>, H. Deppe, M. Deveaux<sup>4</sup>, A. Dubla, I. Elizarov, D. Emschermann, H. Flemming, P. Foka, U. Frankenfeld, V. Friese, J. Frühauf, S. Gorbunov, J.M. Heuser, R. Holzmann, K. Ismail, R.M. Kapell, R. Karabowicz, I. Keshelashvili, M. Kiš, K. Koch, P. Koczoń, D. Kresan, J. Lehnert, F.J. Linz<sup>3</sup>, S. Löchner, O. Lubynets<sup>4</sup>, O. Maragoto Rodríguez<sup>4</sup>, A.M. Marin Garcia, J. Markert, J. Messchendorp, D. Miskowicz, W.F.J. Müller, F. Nickels, J. Pietraszko, D.A. Ramírez Zaldivar<sup>4</sup>, D. Rodríguez Garces<sup>4</sup>, A. Rustamov, C.J. Schmidt, I. Selyuzhenkov, M. Shiroya<sup>4</sup>, C. Simons, C. Sturm, O. Suddia, M. Teklishyn<sup>5</sup>, J. Thaufelder, A. Toia<sup>4,13</sup>, M. Traxler, F. Uhlig, I. Vassiliev, O. Vasylyev, R. Visinka, A. Wilms, S. Zharko, Yingjie Zhou<sup>6</sup>, P. Zumbach

**Darmstadt, Germany, Institut für Kernphysik, Technische Universität Darmstadt**

T. Galatyuk<sup>2,13</sup>, V. Kedych, W. Krüger, F.-J. Seck

**Dresden, Germany, Institut für Strahlenphysik, Helmholtz-Zentrum Dresden-Rossendorf (HZDR)**

B. Kämpfer<sup>14</sup>, D. Stach

**Frankfurt, Germany, Frankfurt Institute for Advanced Studies, Goethe-Universität Frankfurt (FIAS)**

A. Belousov, N. Bluhme, J. de Cuveland, D. Hutter, I. Kisel<sup>13</sup>, G. Kozlov, R. Lakos, V. Lindenstruth<sup>2,13</sup>, A. Mithran, A. Redelbach, O. Tyagi, F. Weiglhofer, G. Zischka

**Frankfurt, Germany, Institut für Kernphysik, Goethe-Universität Frankfurt**

J. Andary, H. Appelshäuser<sup>13</sup>, B. Arnoldi-Meadows, B. Artur, C. Blume<sup>2,13</sup>, H. Cherif<sup>2</sup>, M. Esen, I. Fröhlich<sup>2</sup>, S. Gläsel, B. Gutsche, M. Koziel, J. Michel, C. Müntz, A. Rodríguez Rodríguez<sup>2</sup>, F. Roether, O. Singh<sup>2</sup>, D. Spicker, J. Stroth<sup>2,13</sup>

**Frankfurt, Germany, Institute for Computer Science, Goethe-Universität Frankfurt**

A. Adler, F. Hoffmann, T. Janson, U. Kebschull<sup>13</sup>, D. Schledt

**Gießen, Germany, Justus-Liebig-Universität Gießen**

M. Becker, M. Beyer, J. Diehl, M. Dürr, C. Feier-Riesen, C. Höhne<sup>2,13</sup>, K. Scharmann

**Guwahati, India, Nuclear and Radiation Physics Research Laboratory, Department of Physics, Gauhati University**

B. Bhattacharjee

**Hefei, China, Department of Modern Physics, University of Science & Technology of China (USTC)**

Dongdong Hu, Wen Li, Yongjie Sun, Zhengyang Sun, Kaiyang Wang, Tianxing Wang, Junfeng Yang, Ming Yao

**Heidelberg, Germany, Physikalisches Institut, Universität Heidelberg**

I. Deppner, N. Herrmann<sup>2</sup>, Yue Hang Leung, D.A. Müller, E. Rubio, Y. Söhngen, P. Weidenkaff

**Heidelberg, Germany, Institut für Technische Informatik, Universität Heidelberg**

P. Fischer

**Indore, India, Indian Institute of Technology Indore**

S.K. Kundu, A. Roy, R. Sahoo

**Jammu, India, Department of Physics, University of Jammu**

A. Bhasin, A. Gupta, S. Mahajan, S.S. Sambyal

**Karlsruhe, Germany, Karlsruhe Institute of Technology (KIT)**

M. Balzer, J. Becker, T. Blank, M. Caselle, V. Sidorenko, F. Simon, E. Trifonova, K.L. Unger

**Kharagpur, India, Indian Institute of Technology Kharagpur**

A.K. Singh

**Kolkata, India, Department of Physics, Bose Institute**

S. Biswas, R. Das, S. Das, S.K. Ghosh, S. Gope, S. Mandal, S.K. Prasad, S. Raha, R. Ray, A. Sen, Anjali Sharma

**Kolkata, India, Department of Physics and Department of Electronic Science, University of Calcutta**

A. Bhattacharyya, A. Chakrabarti, R. Ganai, G. Gangopadhyay

**Kolkata, India, Variable Energy Cyclotron Centre (VECC)**

A. Agarwal, Z. Ahammed, P.P. Bhaduri, Souvik Chattopadhyay, Subhasis Chattopadhyay<sup>7</sup>, A.K. Dubey, C. Ghosh, M. Mandal, E. Nandy, J. Saini, P.K. Sharma, V. Singhal

**Kraków, Poland, AGH University of Science and Technology (AGH)**

K. Kasiński, R. Kłeczek, W. Kucewicz, P. Otfinowski, R. Szczygieł, W. Zubrzycka

**Kraków, Poland, Marian Smoluchowski Institute of Physics, Jagiellonian University**

J. Brzychczyk, D. Gil, P. Lasko, Z. Majka, R. Płaneta, P. Staszal, L. Trębacz, A. Wieloch

**Kyiv, Ukraine, High Energy Physics Department, Kiev Institute for Nuclear Research (KINR)**

O. Kshyvanskyi, V. Kyva, V. Militsija, M. Pugach, V. Pugatch, D. Storozhyk

**Kyiv, Ukraine, Department of Nuclear Physics, Taras Shevchenko National University of Kyiv**

O. Bezshyyko, L. Golinka-Bezshyyko, I. Kadenko, O. Lavoryk, V. Plujko

**Münster, Germany, Institut für Kernphysik, Universität Münster**

A. Andronic, R. Berendes, D. Bonaventura, L.J. Faber, F. Fidorra, N. Heine, P. Kähler, Ch. Klein-Bösing, A. Meyer-Ahrens, P. Munkes, A. Puntke, L. Wahmes, J.P. Wessels

**Prague, Czech Republic, Czech Technical University (CTU)**

P. Chaloupka, P. Chudoba, R. Dvořák, K. Haismanová, O. Hofman, V. Petráček

**Pusan, Korea, Pusan National University (PNU)**

In-Kwon Yoo

**Řež, Czech Republic, Nuclear Physics Institute of the Czech Academy of Sciences**

J. Kollarczyk<sup>8</sup>, A. Kugler, A. Opíchal, A. Prozorov

**Srinagar, India, Department of Physics, University of Kashmir**

S.A. Bhat, T.A. Bhat, W.A. Bhat, M.F. Mir

**Tübingen, Germany, Physikalisches Institut, Eberhard Karls Universität Tübingen**

K. Agarwal<sup>2</sup>, S. Bhalerao, L. Chlad<sup>2</sup>, S. Khan, S. Mehta, H.R. Schmidt<sup>2</sup>, E. Volkova

**Varanasi, India, Department of Physics, Banaras Hindu University (BHU)**

A. Kumar, S. Pandey, B.K. Singh, C.P. Singh

**Warsaw, Poland, Faculty of Physics, Warsaw University of Technology**

J. Pluta, D. Wielanek, H. Zbroszczyk

**Warsaw, Poland, Institute of Electronic Systems, Warsaw University of Technology**

M. Gumiński, M. Kruszewski, P.B. Miedzik, K. Poźniak<sup>9</sup>, R. Romaniuk, M. Wojtkowski, W. Zabołotny<sup>9</sup>

**Warsaw, Poland, Faculty of Physics, University of Warsaw**

T. Matulewicz, K. Piasecki

**Wuhan, China, College of Physical Science and Technology, Central China Normal University (CCNU)**

Sheng Dong<sup>10</sup>, Feng Liu, Xiaofeng Luo, Shusu Shi, Zhongbao Yin, Xiaoming Zhang, Yu Zhang, Daicui Zhou

**Wuppertal, Germany, Fakultät für Mathematik und Naturwissenschaften, Bergische Universität Wuppertal**

G. Boccarella, J. Förtsch, K.-H. Kampert, Sukyung Kim, S. Neuhaus, C. Pauly, J. Peña Rodríguez, D. Pfeifer, T. Povar, P. Subramani

**Yichang, China, College of Science, China Three Gorges University (CTGU)**

Sheng-Qin Feng, Ke-Jun Wu, Tao Xiong, Sheng Zheng

## Notes:

##Contact suspended due to Russia's attack on Ukraine, which is a flagrant violation of human rights and international law.

## Additional affiliations:

<sup>1</sup> Fakultät für Mathematik und Naturwissenschaften, Bergische Universität Wuppertal, Wuppertal, Germany

<sup>2</sup> GSI Helmholtzzentrum für Schwerionenforschung GmbH (GSI), Darmstadt, Germany

<sup>3</sup> Institut für Kernphysik, Technische Universität Darmstadt, Darmstadt, Germany

<sup>4</sup> Institut für Kernphysik, Goethe-Universität Frankfurt, Frankfurt, Germany

<sup>5</sup> High Energy Physics Department, Kiev Institute for Nuclear Research (KINR), Kyiv, Ukraine

<sup>6</sup> College of Physical Science and Technology, Central China Normal University (CCNU), Wuhan, China

<sup>7</sup> Department of Physics, Bose Institute, Kolkata, India

<sup>8</sup> Czech Technical University (CTU), Prague, Czech Republic

<sup>9</sup> Faculty of Physics, University of Warsaw, Warsaw, Poland

<sup>10</sup> Physikalisches Institut, Universität Heidelberg, Heidelberg, Germany

<sup>11</sup> also: Institut für Kernphysik, Forschungszentrum Jülich, Jülich, Germany

<sup>12</sup> also: European Organization for Nuclear Research (CERN), Geneva, Switzerland

<sup>13</sup> also: Helmholtz Research Academy Hesse for FAIR, Frankfurt, Germany

<sup>14</sup> also: Technische Universität Dresden, Dresden, Germany