



Contribution ID: 268

Type: Oral presentation

QUBIC: Exploring the primordial Universe with the Q&U Bolometric Interferometer

Monday 9 July 2018 15:00 (30 minutes)

QUBIC (the Q and U Bolometric Interferometer for Cosmology) is a CMB polarimeter designed to search the B-mode polarization of the CMB, the signature expected from primordial gravitational waves generated during the inflation phase of the early Universe.

QUBIC is currently being integrated and tested and will be installed in late 2018 in its observation site near San Antonio de los Cobres on the Puna plateau in Salta, Argentina at 5000m a.s.l. offering dry atmosphere and clear sky.

QUBIC is an innovative instrument based on the novel technology of bolometric interferometry that combined the high sensitivity of bolometric detectors (2048 Transition Edge Sensors) along with the observation of interference fringes (400 channels) allowing for an unprecedented control of systematic effects. Furthermore, our synthesized beam being significantly frequency-dependent, QUBIC has spectro-imaging capabilities allowing us to reconstruct multiple sub-frequency CMB polarizations maps within our two wide-band filters (150 and 220 GHz). This opens promising perspectives for the control of foreground B-modes contamination, especially in the likely presence of complex dust emission.

End-To-End simulations have shown that QUBIC will reach a sensitivity of $\sigma(r)=0.01$ after two years of integration.

Primary authors: Prof. MENNELLA, Aniello (University of Milan / INFN-Milan); Dr ADE, P. (University of Cardiff); AMICO, G. (University of Rome La Sapienza); Dr AUGUSTE, D. (Lab. de l'Accélérateur Linéaire); Dr AUMONT, J. (Institut d'Astrophysique Spatiale); Mr S., Banfi (Univ. degli Studi di Milano-Bicocca); Dr BARBARÀN, G. (Comisión Nacional de Energía Atómica (Argentina)); Dr BATTAGLIA, P. (Università degli Studi di Trieste (Italy)); Dr BATTISTELLI, E. (Università di Roma La Sapienza / INFN Sezione di Roma 1 (Italy)); Dr BAÙ, A. (Università di Milano Bicocca (Italy)); Dr BÉLIER, B. (Ctr. de Nanosciences et de Nanotechnologies (France)); Dr BENNETT, D.G. (National Univ. of Ireland, Maynooth (Ireland)); Dr BERGÉ, L. (Ctr. de Spectrométrie Nucléaire et de Spectrométrie de Masse (France)); Dr BERNARD, J.Ph. (Institut de Recherche en Astrophysique et Planétologie (France)); Prof. BERSANELLI, M. (Univ. degli Studi di Milano / INFN Milano (Italy)); Dr BIGOT-SAZY, M.-A. (Univ. Paris Diderot-Paris 7 (France)); Dr BLEURVACQ, N. (Univ. Paris Diderot-Paris 7 (France)); Dr BONAPARTE, J. (Comisión Nacional de Energía Atómica (Argentina)); Dr BONIS, J. (Lab. de l'Accélérateur Linéaire (France)); Dr BORDIER, G. (Univ. Paris Diderot-Paris 7 (France)); Dr BRÉELLE, E. (Univ. Paris Diderot-Paris 7 (France)); Dr BUNN, E.F. (Univ. of Richmond (United States)); Dr BUZI, D. (Sapienza Univ. di Roma (Italy)); Dr BUZZELLI, A. (Univ. degli Studi di Roma "Tor Vergata" (Italy)); Mr CAVALIERE, F. (Università degli Studi di Milano / INFN Milano (Italy)); Dr CHANIAL, P. (Univ. Paris Diderot-Paris 7 (France)); Dr CHAPRON, C. (Univ. Paris Diderot-Paris 7 (France)); Dr CHARLASSIER, R. (Univ. Paris Diderot-Paris 7 (France)); Dr COLUMBRO, F. (Sapienza Univ. di Roma (Italy)); Dr COPPI, G. (Univ. of Manchester (United Kingdom)); Dr COPPOLECCHIA, A. (Sapienza Univ. di Roma / INFN Sezione di Roma 1 (Italy)); Dr COUCHOT, F. (Lab. de l'Accélérateur Linéaire (France)); Dr D'AGOSTINO, R. (Univ. degli Studi di Roma "Tor Vergata" (Italy)); Dr D'ALESSANDRO, G. (Sapienza Univ. di Roma (Italy) / INFN Sezione di Roma 1 (Italy)); Dr DE BERNARDIS, P. (Sapienza Univ. di Roma (Italy) / INFN Sezione di Roma 1 (Italy)); Dr DE GASPERIS, G. (Univ. degli Studi di Roma "Tor Vergata" / INFN Sezione di Roma 2 (Italy)); Dr

DE LEO, M. (Sapienza Univ. di Roma / INFN Sezione di Roma 1 (Italy)); Dr DE PETRIS, M. (Sapienza Univ. di Roma / INFN Sez Roma 1 (Italy)); Dr DI DONATO, A. (Comisión Nacional de Energía Atómica (Argentina)); Dr DUMOULIN, L. (Ctr. de Spectrométrie Nucléaire et de Spectrométrie de Masse (France)); Dr ETCHEGOYEN, A. (Instituto de Tecnologías en Detección y Astropartículas (Argentina)); Dr FASCISZEWSKI, A. (Comisión Nacional de Energía Atómica (Argentina)); Dr FRANCESCHET, C. (Univ. degli Studi di Milano / INFN Sezione di Milano (Italy)); Dr GAMBOA-LERENA, M. (Univ. Nacional de la Plata (Argentina)); Dr GARCIA, B. (Instituto de Tecnologías en Detección y Astropartículas (Argentina)); Dr GARRIDO, X. (Lab. de l'Accélérateur Linéaire (France)); Dr GASPARD, M. (Lab. de l'Accélérateur Linéaire (France)); Dr GAULT, A. (Univ. of Wisconsin-Madison (United States)); Dr GAYER, D. (National Univ. of Ireland, Maynooth (Ireland)); Prof. GERVASI, M. (Univ. di Milano Bicocca / INFN - Milano Bicocca (Italy)); Dr GIARD, M. (Institut de Recherche en Astrophysique et Planétologie (France)); Dr GIRAUD-HÉRAUD, Y. (Univ. Paris Diderot-Paris 7 (France)); Dr GÓMEZ BERISSO, M. (Ctr. Atómico Bariloche and Instituto Balseiro, CNEA (Argentina)); Dr GONZÁLEZ, M. (Ctr. Atómico Bariloche and Instituto Balseiro, CNEA (Argentina)); Dr GRADZIEL, M. (National Univ. of Ireland, Maynooth (Ireland)); Dr GRANDSIRE, L. (Univ. Paris Diderot-Paris 7 (France)); Dr GUERRARD, E. (Lab. de l'Accélérateur Linéaire (France)); Dr HAMILTON, J.-Ch (Univ. Paris Diderot-Paris 7 (France)); Dr HARARI, D. (Ctr. Atómico Bariloche and Instituto Balseiro, CNEA (Argentina)); Dr HAYNES, V. (Univ. of Manchester (United Kingdom)); Dr HENROT-VERSILLÉ, S. (Lab. de l'Accélérateur Linéaire (France)); Dr HOANG, D.T. (Univ. Paris Diderot-Paris 7 (France)); Dr INCARDONA, F. (Univ. degli Studi di Milano / INFN - Milano (Italy)); Dr JULES, E. (Lab. de l'Accélérateur Linéaire (France)); Dr KAPLAN, J. (Univ. Paris Diderot-Paris 7 (France)); Dr HOLTZER, N. (Ctr. de Spectrométrie Nucléaire et de Spectrométrie de Masse (France)); Dr KOROTKOV, A. (Brown Univ. (United States)); Dr KRISTUKAT, C. (Univ. Nacional De San Martín (Argentina)); Dr LAMAGNA, L. (Sapienza Univ. di Roma / INFN Sezione di Roma 1 (Italy)); Dr LOUCATOS, S. (Univ. Paris Diderot-Paris 7 (France)); Dr LANDE, J. (Univ. Paris-Sud (France)); Dr LOUIS, T. (Lab. de l'Accélérateur Linéaire (France)); Dr LUKOVIC, V. (Univ. degli Studi di Roma "Tor Vergata" (Italy)); Dr LUTERSTEIN, R. (Comisión Nacional de Energía Atómica (Argentina)); Prof. MAFFEI, B. (Institut d'Astrophysique Spatiale (France)); Dr MARNIEROS, S. (Ctr. de Spectrométrie Nucléaire et de Spectrométrie de Masse (France)); Prof. MASI, S. (Sapienza Univ. di Roma / INFN Sezione di Roma 1 (Italy)); Dr MATTEI, A. (INFN Sezione di Roma (Italy)); Dr MAY, A. (Univ. of Manchester (United Kingdom)); Dr MCCULLOCH, M. (Univ. of Manchester (United Kingdom)); Dr MEDINA, M.C. (Instituto Argentino de Radioastronomía (Argentina)); Dr MELE, L. (La Sapienza Univ. di Roma (Italy)); Dr MELHUIH, S.J. (Univ. of Manchester (United Kingdom)); Dr MONTIER, L. (Institut de Recherche en Astrophysique et Planétologie (France)); Dr MUNDO, L.M. (Univ. Nacional de la Plata (Argentina)); Dr MURPHY, J.A. (National Univ. of Ireland, Maynooth (Ireland)); Dr MURPHY, J.D. (National Univ. of Ireland, Maynooth (Ireland)); Dr O'SULLIVAN, C. (National Univ. of Ireland, Maynooth (Ireland)); Dr NÉEL, D. (Ctr. de Spectrométrie Nucléaire et de Spectrométrie de Masse (France)); Dr OLIVIERI, E. (Ctr. de Spectrométrie Nucléaire et de Spectrométrie de Masse (France)); Dr PAIELLA, A. (La Sapienza Univ di Roma / INFN Sezione di Roma 1 (Italy)); Dr PAJOT, F. (Institut de Recherche en Astrophysique et Planétologie (France)); Mr PASSERINI, A. (Univ. degli Studi di Milano-Bicocca / INFN Sezione di Milano-Bicocca (Italy)); Dr PASTORIZA, H. (Ctr. Atómico Bariloche and Instituto Balseiro, CNEA (Argentina)); Dr PELOSI, A. (INFN Sezione di Roma (Italy)); Dr PERBOST, C. (Univ. Paris Diderot-Paris 7 (France)); Dr PERDEREAU, O. (Lab. de l'Accélérateur Linéaire (France)); Dr PEZZOTTA, F. (Univ. degli Studi di Milano INFN Sezione di Milano (Italy)); Prof. PIACENTINI, F. (Sapienza Univ. di Roma / INFN Sezione di Roma 1 (Italy)); Dr PIAT, M. (Univ. Paris Diderot-Paris 7 (France)); Prof. PICCIRILLO, L. (Univ. of Manchester (United Kingdom)); Dr PISANO, G. (Cardiff Univ. (United Kingdom)); Dr POLENTA, G. (ASI (Italy)); Dr PRÉLE, D. (Univ. Paris Diderot-Paris 7 (France)); Dr PUDDU, R. (Sapienza Univ. di Roma / INFN Sezione di Roma 1 (Italy)); Dr RAMBAUD, D. (Institut de Recherche en Astrophysique et Planétologie (France)); Dr RINGEGNI, P. (Univ. Nacional de la Plata (Argentina)); Dr RIGAUT, O. (Ctr. de Spectrométrie Nucléaire et de Spectrométrie de Masse (France)); Dr ROMERO, G.E. (Instituto Argentino de Radioastronomía (Argentina)); Dr SALATINO, M. (Univ. Paris Diderot-Paris 7 (France)); Dr SCHILLACI, A. (Sapienza Univ. di Roma (Italy)); Dr SCÓCCOLA, G. (Univ. Nacional de la Plata (Argentina) CONICET (Argentina)); Dr SCULLY, S.P. (Institute of Technology Carlow (Ireland)); Dr SPINELLI, S. (Univ. degli Studi di Milano-Bicocca (Italy)); Dr STOLPOVSKIY, M. (Univ. Paris Diderot-Paris 7 (France)); Dr SUAREZ, F. (Instituto de Tecnologías en Detección y Astropartículas (Argentina)); Dr TARTARI, A. (INFN Pisa (Italy)); Dr THERMEAUX, J.-P. (Univ. Paris Diderot-Paris 7 (France)); Dr TIMBIE, P. (Univ. of Wisconsin-Madison (United States)); Dr TORCHINSKY, S.A. (Univ. Paris Diderot-Paris 7 (France)); Dr TRISTRAM, M. (Lab. de l'Accélérateur Linéaire (France)); Dr TRUONGCANH, V. (Lab. de l'Accélérateur Linéaire (France)); Dr TUCKER, G.S. (Brown Univ. (United States)); Dr TUCKER, C.E. (Cardiff Univ. (United Kingdom)); Dr VANNESTE, S. (Lab. de l'Accélérateur Linéaire (France)); Dr VIGANÒ, D. (Univ. degli Studi di Milano / INFN Sezione di Milano (Italy)); Prof. VITTORIO, N. (Univ. degli Studi di Roma "Tor Vergata" / INFN Sezione di Roma 2 (Italy)); Dr VOISIN, F. (Univ. Paris Diderot-Paris 7 (France)); Dr WATSON, B. (Univ. of Manchester (United Kingdom)); Dr WICEK, F. (Lab. de l'Accélérateur Linéaire (France)); Dr ZANNONI, M. (Univ. degli Studi di Milano-Bicocca / INFN Sezione di Milano-Bicocca (Italy)); Dr ZULLO, A. (Sapienza Univ. di Roma (Italy))

Presenter: Prof. MENNELLA, Aniello (University of Milan / INFN-Milan)

Session Classification: Parallel Section D Cosmology, Astrophysics, Gravity, Mathematical Physics