



ID de Contribution: 45

Type: **Contributed talk**

## Circular Polarizations of Gravitational Waves from Core-Collapse Supernovae: A Clear Indication of Rapid Rotation

*mardi 30 mai 2017 17:20 (15 minutes)*

We propose to employ the circular polarization of gravitational waves emitted by core-collapse supernovae as an unequivocal indication of rapid rotation deep in their cores just prior to collapse. It has been demonstrated by three dimensional simulations that nonaxisymmetric accretion flows may develop spontaneously via hydrodynamical instabilities in the postbounce cores. It is not surprising, then, that the gravitational waves emitted by such fluid motions are circularly polarized. We show that a network of the second generation detectors of gravitational waves worldwide can be able to detect such polarizations up to the opposite side of the Galaxy as long as the rotation period of the core is shorter than a few seconds prior to collapse.

**Auteur principal:** Prof. HAYAM, Kazuhiro (KAGRA Observatory, ICRR, U tokyo)

**Co-auteurs:** Prof. NAKAMURA, Ko (U Fukuoka); Prof. YAMADA, Shoichi (Advanced Research Institute for Science and Engineering, Waseda University and Science & Engineering, Waseda University); Prof. KURODA, Takami (U. Darmstadt)

**Orateur:** Prof. HAYAM, Kazuhiro (KAGRA Observatory, ICRR, U tokyo)

**Classification de Session:** Un-modeled signals, Bursts