Angela Di Virgilio short CV

Di Virgilio has studied at the University of Pisa and has been PostDoc at Purdue University 1984-1985. Since 1086 she has been INFN researcher, and senior researcher since 2002.
She has started her career in CDF. She has taken part at the construction and calibration of the central and end-walls calorimeters. She was responsible of the calibration with cosmic rays. CDF has detected the Top quark.
From 1985 she has been active in the research on gravitational wave detection, with special attention to the low frequency detection.
In the years 1994-2005, she has been responsible of the Low frequency Facility, satellite experiment of Virgo, experiment that has measured the opto-mechanical coupling due to radiation pressure, and with very high precision the noise of the suspension around 10Hz. The low frequency research has been determinant for the discovery of GW150914, a signal between 36 and 250Hz.
Her interest in ring-laser development and study has began in 2007. Since the beginning she has been responsible of research activity. Two prototypes have been developed, in particular the prototype GINGERINO has been constructed in the underground laboratory of LNGS in 2014. She has lead the study of GINGER, the proposal for a project aiming at the LenseThirring measurement on earth with 1% precision, one of the General Relativity test feasible on earth.

Curriculum Vitae Carelli Giorgio

Since 1986 he worked on topics of laser spectroscopy in the THz region and he developed significant experience in the construction and use of lasers in the regions of mid-infrared (10 m) and FIR or sub-millimeter (40-1500 um). The work was dedicated to the research of new active molecules, the characterization of the radiation detectors in the FIR and the search for new materials to use in the sub-millimeter region. He measures frequency laser transitions of possible interest for the Italian sub-millimeter standard, developed in collaboration with the National Institute of Metrology in Turin, and laser transitions of astrophysical interest in joint research with Dr. R. Densing the Max Planck Institute for Radio Astronomy in Bonn and Dr. I. Gianinoni of CISE S.p.A. Milan, ESA Project "Development of Critical Detection Technologies."

From February 1992 to January 1994 he earned two successive CNR grants, project "Superconducting and Cryogenic Technologies." The purpose of this research is developing a method for diagnosis in situ and non-destructive during the deposition of films. To achieve this goal we study the evolution of the THz optical properties of the material to the superconducting transition. The possibility of using superconducting films for the realization of electromagnetic high-finesse cavity was also checked. The developed techniques are applied to indium antimonide (InSb) crystals to measure transmission and reflectivity in the THz.

In 1994, he got a fellowship from the Inter-university Consortium for Physics of Matter, for application of diodes Metal-Insulator-Metal (MIM) to frequency metrology. Later as a consultant to the Department of Physics, University of Pisa contributes to develop a transducer nano-forces based on the MIM diode. During 1995, a fellowship from the National Institute for the Physics of Matter (INFM) deals with the development of a system for the realization of ultra-short pulses of radiation FIR.

In 1996, acting as temporary technical collaborator of the University of Pisa, developed a CO2 laser - FIR for applications in electron paramagnetic resonance at high fields. As part of the collaboration between the University of Pisa and those of Campinas and Sao Paulo in Brazil spends a period during which participates in the development of a novel optical resonator for CO2 laser. Since January 1997 he participated in the development of a device for generating tunable far infrared radiation through a device based on a thin crystal of InSb. Since 07/01/1997 is with the Department of Physics, University of Pisa where he worked on tunable radiation sources in the THz region.

In 1999 he spent a period of two months at the Institute of Laser Physics of the Siberian section of the Russian Academy of Sciences, and began a collaboration that leads to build in Pisa of a Ti:Sa femtosecond laser. Semiconductor diodes built in Pisa are compared with InP diodes built in Tomsk for generating beat notes between carbon dioxide laser and between different modes of a frequency comb generated by a laser Ti: Sa. Cooperate in the construction and development of a new power supply completely solid state for carbon dioxide laser, which is then patented by INFM. Since 2000 the two lines of research and development of molecular spectroscopy harmonic mixers that cover the spectrum from near ultraviolet to the microwave go on in parallel. The study of some molecules such as hydrazine, leading to a better understanding of their structure and within an INFM project in collaboration with the Polytechnic of Milan, built a chain of frequency synthesis which allows frequency measurements absolute molecular laser transitions up to THz. Continues to develop mixer were made with different III-V semiconductor devices obtaining efficient over the entire electromagnetic spectrum of interest and performance in specific areas comparable to dedicated devices. Furthermore, the mixer generating the beat note between a FIR laser at 300 GHz and the frequency comb generated by a laser Ti: Sa femtosecond. He was the local main investigator of a project INFM with a group of University of Palermo, on the harmonic

generation in III-V semiconductors for the years 2002-2003.

In 2003 he is one of the founders of Marwan Technology (MT), an INFM spin-off devoted to the development and marketing of optoelectronic sensors and analytical instruments. In 2005, the company is rewarded by Unioncamere for innovation with the design of an analytical tool "Modi".

Since 2005 he is a researcher at the Faculty of Mathematical, Physical and Natural Sciences, University of Pisa. He made a first comparison between FIR molecular lasers and quantum cascade laser diode. He participates to the INFN project G-Pisa for the development of a laser gyroscope. A first experimental apparatus was used to measure the tilt of Virgo gravitational antenna. A larger apparatus is now installed in the tunnel of LNGS-INFN and is devoted to geophysical and geodetic measurement. In the last year a collaboration was established between University of Pisa, CNR and CREA to develop a new method to measure the leaf water content using THz quantum cascade laser, a patent was filled for this work.

MT in the period 2014- 2016 was involved in two different project financed by the EU. In MED-SUV MT developed a strain-sensor dedicated to test the area of the Etna volcano, the system is still working on site. In ShredderSort the thechnology of Modì was applied to the sorting of shredding from the automtive sector and a prototype was tested.

Curriculum sintetico - Dr. Isidoro Ferrante

Laurea in fisica con 110 e lode nel giugno del 1989.

Dottorato in fisica nel novembre 1992.

Ricercatore di fisica presso l'università di Pisa dal 1992.

Ho svolto attività di ricerca fino al 2000 nell'ambito dell'esperimento ALEPH a LEP, il collisionatore di elettroni e positroni realizzato al CERN di Ginevra, occupandomi in particolare della fisica del mesone tau e della misura della sua vita media. Nell'ambito dell'esperimento ALEPH mi sono occupato anche della simulazione dell'esperimento (in particolare della generazione di eventi supersimmetrici), della presa dati, dello studio dell'efficienza del rivelatore di traccia e degli algoritmi di ricostruzione.

Nel 1993 sono entrato a far parte dell'esperimento Virgo, il grande interferometro Michaelson per la rivelazione delle onde gravitazionali. Nell'ambito di questa collaborazione mi sono occupato dapprima ella simulazione della luce diffusa all'interno del tubo a vuoto, e successivamente della messa a punto dei test sulla dinamica dei filtri di controllo degli specchi dell'interferometro. Da quando l'interferometro ha iniziato la presa dati, mi occupo dello studio del rumore ambinetale, in particolare il rumore acustico, e dei suoi effetti sulla sensibilità dello strumento. Negli ultimi mesi sono entrato a far parte del gruppo incaricato di rivedere i risultati destinati alla pubblicazione, relativamente alla ricerca di eventi impulsivi nei dati raccolti da Virgo durante la presa dati effettuata in contemporanea con l'esperimento statunitense LIGO.

Ho anche svolto attività di divulgazione scientifica realizzando alcuni degli eserimenti messi in mostra presso la "ludoteca scientifica" di Pisa.

Mantengo una piccola attività nel campo dell'acustica musicale, in cui applico i metodi adoperati nell'analisi delle onde gravitazionali.