ALMA: status of construction and the initial observations

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***Abstract*—The progress of the construction of the Atacama Large Millimeter/submillimeter Array (ALMA), an international partnership of Europe, North America and East Asia in cooperation with the Republic of Chile, is presented. ALMA will be composed of 66 antenna elements, which are grouped into an array of fifty 12-m antennas (the 12-m Array) and an array of twelve 7-m antennas plus four 12-m antennas (the Atacama Compact Array = ACA). Each antenna is equipped with a 10-band receiver front end designed to cover all atmospheric windows from 30 to 950 GHz (we initially equip with seven bands on all antennas and another band for selected antennas).**

The construction of ALMA is well advanced with all the subsystems in quantity production, with many items already competed its production. These subsystems are transported to Chile and are being integrated as antenna elements and verified at the ALMA Operations Support Facility (OSF) at an altitude of 2,900 meters. The completed antenna elements are then transported to the Array Operations Site (AOS) at an altitude of 5,000 meters and deployed on the antenna stations for commissioning and science verifications. The construction of the infrastructures at AOS and OSF is in its advanced stage, with the permanent power supply system being prepared for acceptance. The technical building at AOS houses two correlators, one with 64 inputs mainly to cover the 12-m Array and another dedicated for the ACA. The ALMA software system has been developed progressively (now Ver. 8 in use and Ver. 9 under test) along with the systems to support the science users in proposal preparation and the data reduction/analysis.

So far, more than 30 antenna elements have been delivered to AOS. The Joint ALMA Observatory has started since September 2011 the Early Science Operations based on the peer reviewed proposals from the scientists over the world. Some selected results of science verification observations will be presented in the talk.