



## **iSPEX: everybody can measure atmospheric aerosols with a smartphone spectropolarimeter**

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An increasing amount of people carry a mobile phone with internet connection, camera and large computing power. iSPEX, a spectropolarimetric add-on with complementary app, instantly turns a smartphone into a scientific instrument to measure dust and other aerosols in our atmosphere. A measurement involves scanning the blue sky, which yields the angular behavior of the degree of linear polarization as a function of wavelength, which can unambiguously be interpreted in terms of size, shape and chemical composition of the aerosols in the sky directly above. The measurements are tagged with location and pointing information, and submitted to a central database where they will be interpreted and compiled into an aerosol map. Through crowdsourcing, many people will thus be able to contribute to a better assessment of health risks of particulate matter and of whether or not volcanic ash clouds are dangerous for air traffic. It can also contribute to the understanding of the relationship between atmospheric aerosols and climate change.

We will give a live presentation of the first iSPEX prototype. Furthermore, we will present the design and the plans for producing the iSPEX add-on, app and website. We aim to distribute thousands of iSPEX units, such that a unique network of aerosol measurement equipment is created. Many people will thus contribute to the solution of several urgent social and scientific problems, and learn about the nature of light, remote sensing and the issues regarding atmospheric aerosols in the process. In particular we focus on school classes where smartphones are usually considered a nuisance, whereas now they can be a crucial part of various educational programs in science class.