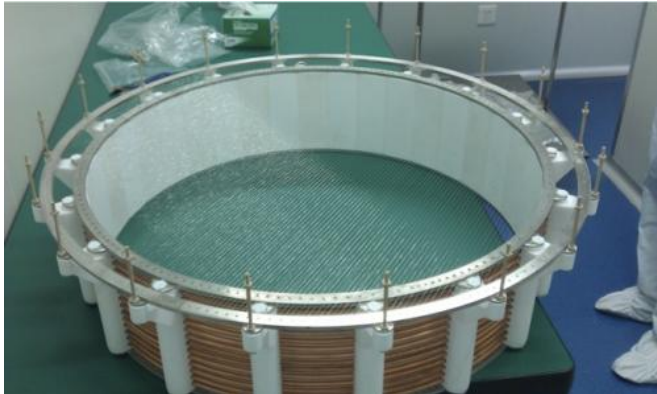


China's PandaX WIMP detector set to begin operations soon

31 January 2014, by Bob Yirka



The field cage for phase-1a

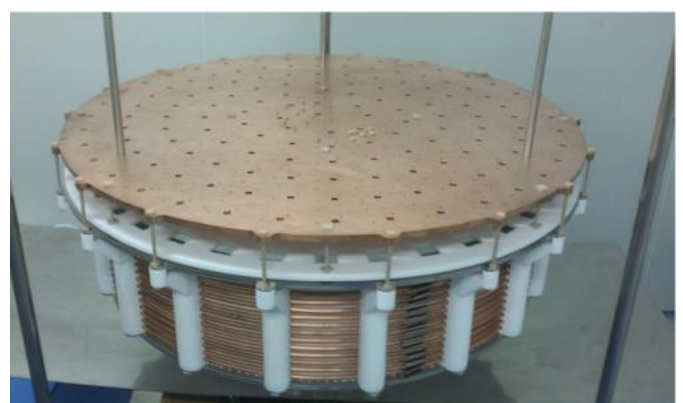
(Phys.org) —China's PandaX Dark Matter Experiment is in final preparations to begin operating sometime early this year, representatives for the project have told the press. Its mission is to capture evidence of a Weakly Interacting Massive Particle (WIMP) colliding with the nucleus of a xenon atom—evidence of dark matter.

Several facilities around the world are already conducting the same sort of research, of course, but the facility in China has a decided advantage—it's sheltered beneath tons of marble. As with the other facilities, the idea is to prove that WIMPs are real and by extension, that theories about dark matter are as well.

Dark matter isn't something that has been proven to exist, instead, it's a theory that has been developed to explain gravitational anomalies in space—why do galaxies have [gravitational effects](#) by objects that cannot be seen? Scientists believe it's because of a type of matter that has a gravitational impact, but cannot be seen by the naked eye, or with any other type of device that physicists have conceived. The best they've been able to come up with is the idea of WIMPS—a theoretical elementary particle that makes up dark

matter. If the existence of WIMPS can be proven, that would go a long way towards proving that theories regarding [dark matter](#) are true too.

Thus far none of the research facilities constructed to detect WIMPs has been able to do so, though the idea for all of them is essentially the same—fill a big tank with a certain type of material, shield it from other space based particles, then watch for collisions between the nucleus of an atom of the material used and some other particle—hopefully, a WIMP. With the Chinese project, the material is [xenon](#)—1.2 metric tons of it. Physicists hope that if such a collision does occur, photons and electrons will be given off and the combination of the two will be enough for sensors to detect where in the vat the collision occurred. That will allow for calculating the speed of the object that made its way in, which can be compared with theories about the speed at which WIMPs travel—if the two match, physicists around the globe will conclude that it was most likely a WIMP and those on the project can start preparing their Noble Prize acceptance speeches.



The field cage integrated with the top PMT supporting plate



More information: pandax.physics.sjtu.edu.cn/

© 2014 Phys.org

APA citation: China's PandaX WIMP detector set to begin operations soon (2014, January 31) retrieved 18 June 2019 from <https://phys.org/news/2014-01-china-pandax-wimp-detector.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.