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Suppression of Rn-daughters in the DarkSide Dark Matter Search
HUAJIE CAO, Princeton University, BOREXINO AND DARKSIDE COLLABORATION — Alpha-emitting activity from radon daughters will be an important source of background for the next generation of direct dark matter searches. A vacuum swing adsorption (VSA) system with a radon suppression factor better than 100 was constructed and operated to purify the make-up air to the clean room that was used for the construction of the Borexino nylon vessels. The system was recently refurbished and upgraded for use in the construction and assembly of the DarkSide-50 dark matter detector. The VSA system consists of two charcoal-filled tanks cycled between atmospheric pressure and 10 mbar. I will discuss the design and operation of the system and detail its performance. Results from this test may inform the development of radon filters dedicated to support the next generation of dark matter and double beta decay detectors.

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