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CF₄-filled micropattern detector aiming neutron imaging

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The Micro Hole & Strip Plate (MHSP) operating in a CF₄ atmosphere aiming neutron imaging will be presented. Recent results of the MHSP operation in pure xenon have shown position resolutions of around 300 μm and gas gains well above 10^4 for tetrafluoromethane (CF₄) at atmospheric pressure. CF₄ combined with ³He is generally known as an efficient gas for proton and tritium stopping, produced in the nuclear reaction ³He(n,p)T, as well as a low sensitive gamma medium. Using resistive lines for charge division deposited perpendicularly on each side of the MHSP, it is possible to determine where the nuclear reaction took place and to obtain the neutron image. Systematic studies of the position resolution and gas gain as a function of the CF₄ pressure up to 2.6 bar will be presented.

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Track Classification: Gas Pixel Detectors