

EXPERIMENT : Search for Betatron Amplitude Dependence of Stacking.
EXPERIMENTERS : R. Johnson, J. Marriner.
DATE : 16 March 1983.

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Introduction

The experiment was a first effort to look for a betatron amplitude of the stacking rate. Since the time available for this exercise was limited, we decided to do the simplest thing we could think of: namely to inject a single pulse and watch its evolution.

Technique

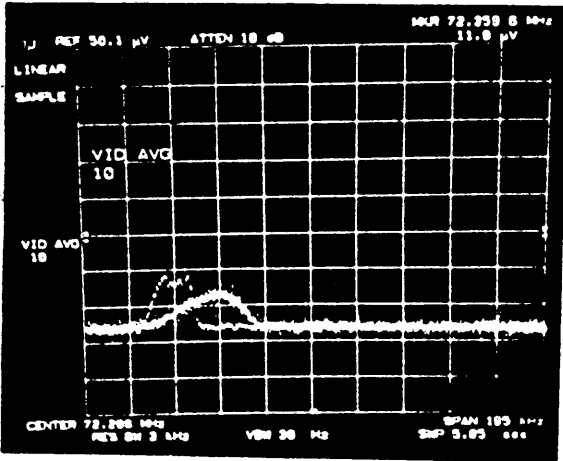
The injection line was detuned to yield a small number of protons (about 10^{11}) on the injection orbit. The batch of protons was precooled and then moved to the stacking orbit in the usual way. The stack tail system was gated for 2 s cycles which could initiate under push button control. Photographs of the evolution of the pulse, as measured by the resonant Schottky pick-up are shown in Fig. 1. The procedure was repeated except that after precooling the horizontal size of the beam was increased by giving it a "2-module" kick from the injection kicker. The exact difference in beam size between the unexcited and excited cases was not measured, but the 2-module kick was previously measured to increase the beam emittance to 60π mm.mrad. The kick caused 20% of the beam to be lost. The evolution of the larger emittance beam pulse is shown in Fig. 2. The r.f. and cooling systems were operated within the normal range of parameters.

Conclusion

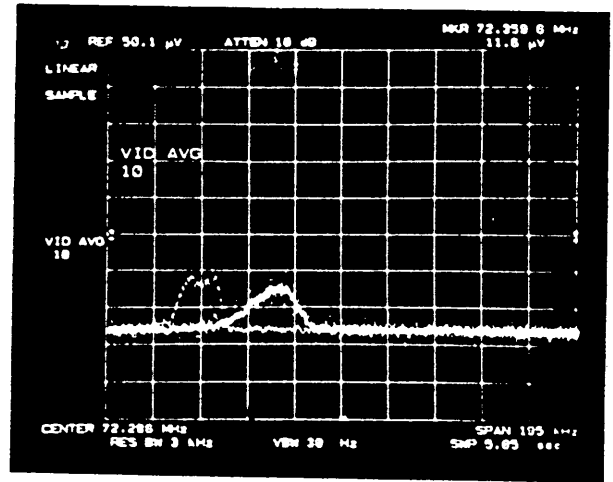
No dependence of stacking on betatron amplitude was observed.

Reported by J. Marriner

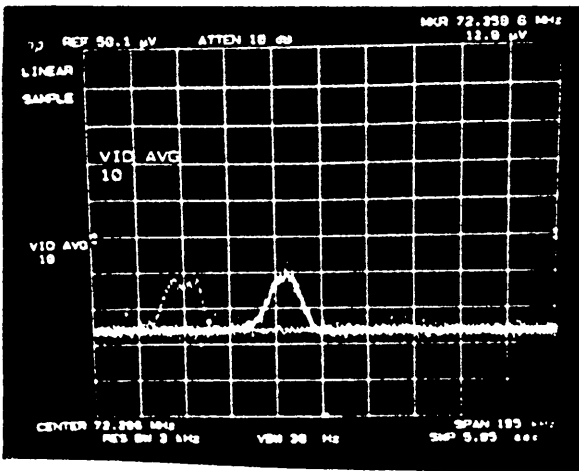
Fig 1. No 2 module Kick



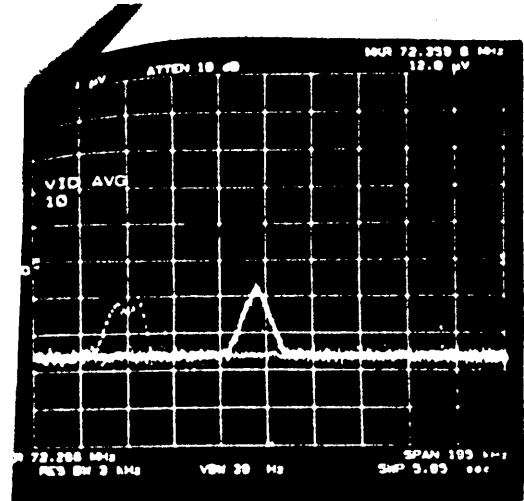
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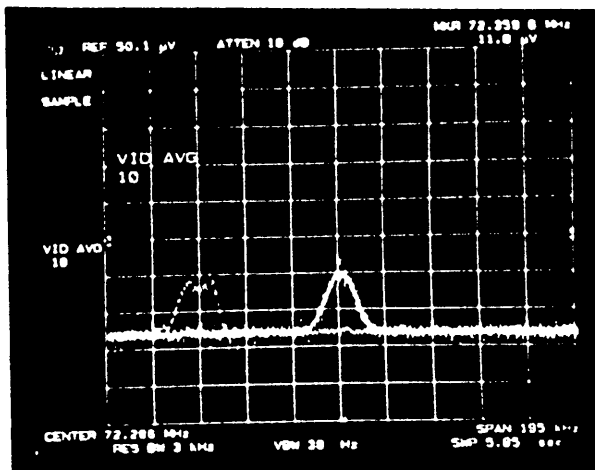
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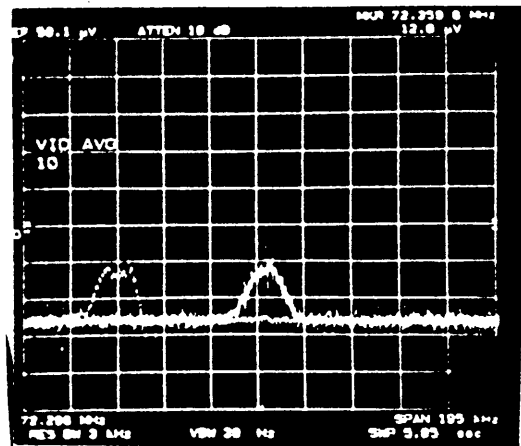
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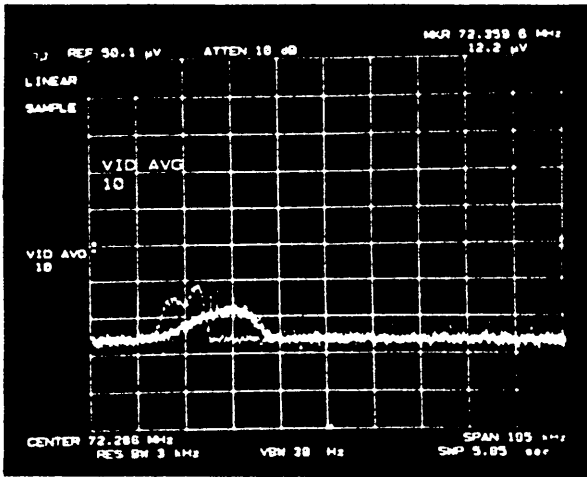


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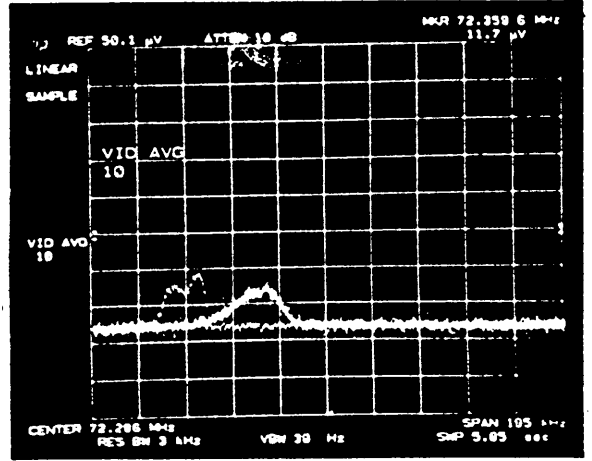


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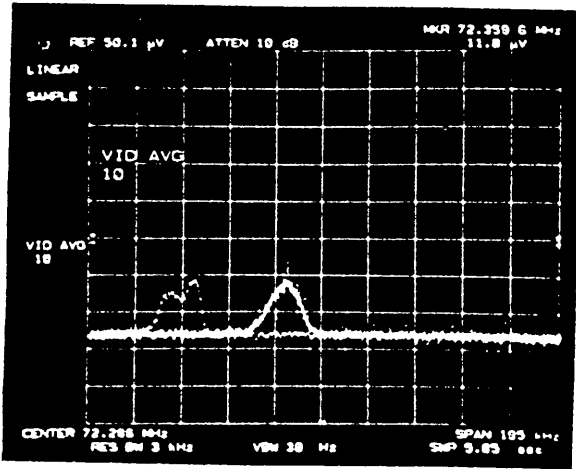
Fig 2. w/ 2 module kick



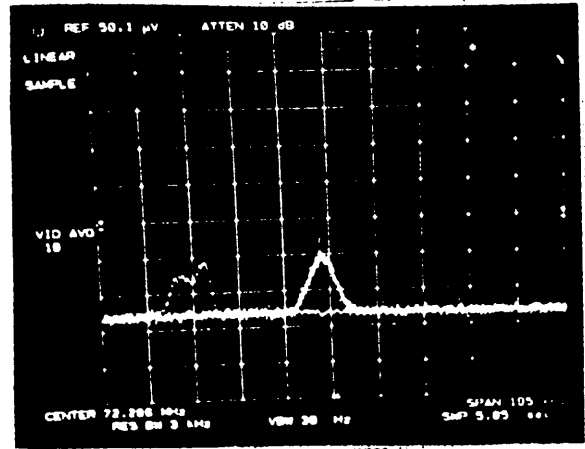
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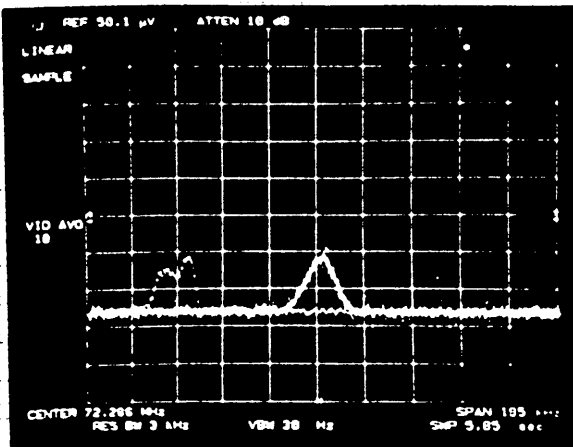
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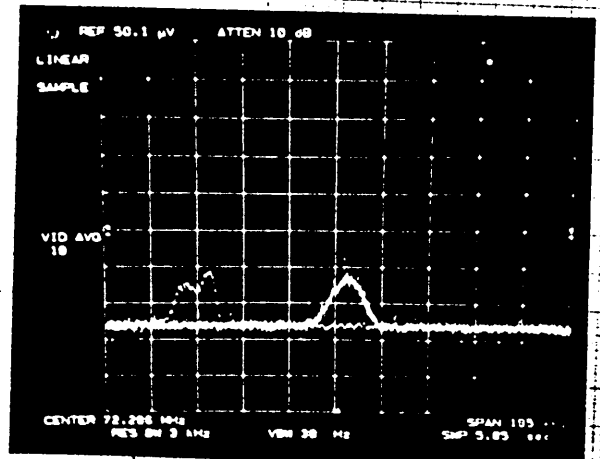
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