

Cosmic event definition

DUNE 35-ton Simulation and Reconstruction

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BNL

November 4, 2015

Introduction

I have been looking at the 10-milliblock cosmic MC samples

- Each event is 32k TDC ticks, about 10 drifts
- Many cosmics in each event

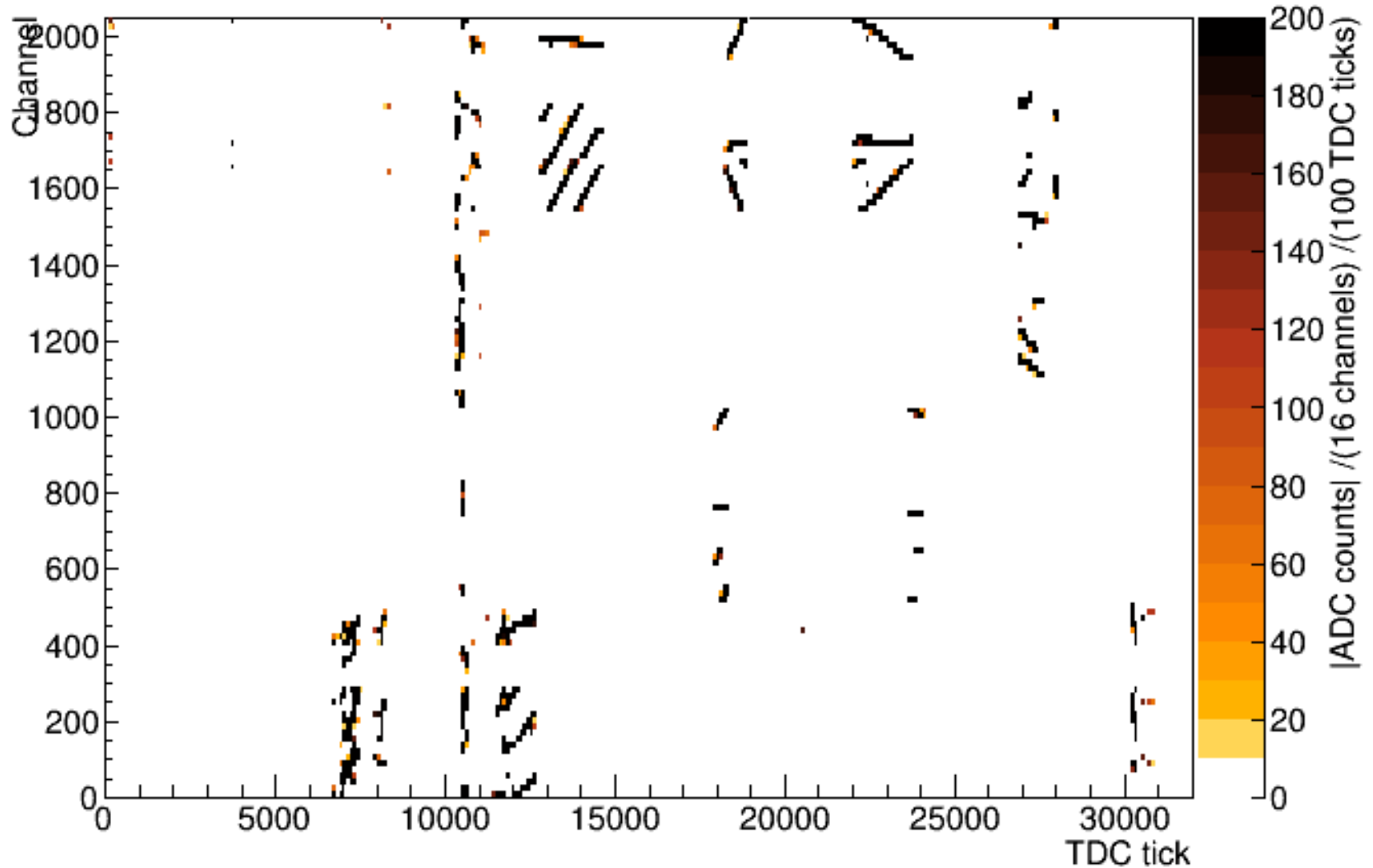
Like to have each event include approximately one cosmic

- Looks like it is easy to define event boundaries with empty channels
- E.g. start a new event after N empty TDC bins
 - Empty means no channel with $|\text{signal}|$ above some threshold
 - For real data, empty should include noise, bad channels and radiologicals
 - $N = 100 - 1000$
- For continuous data, new event may cross old event boundaries

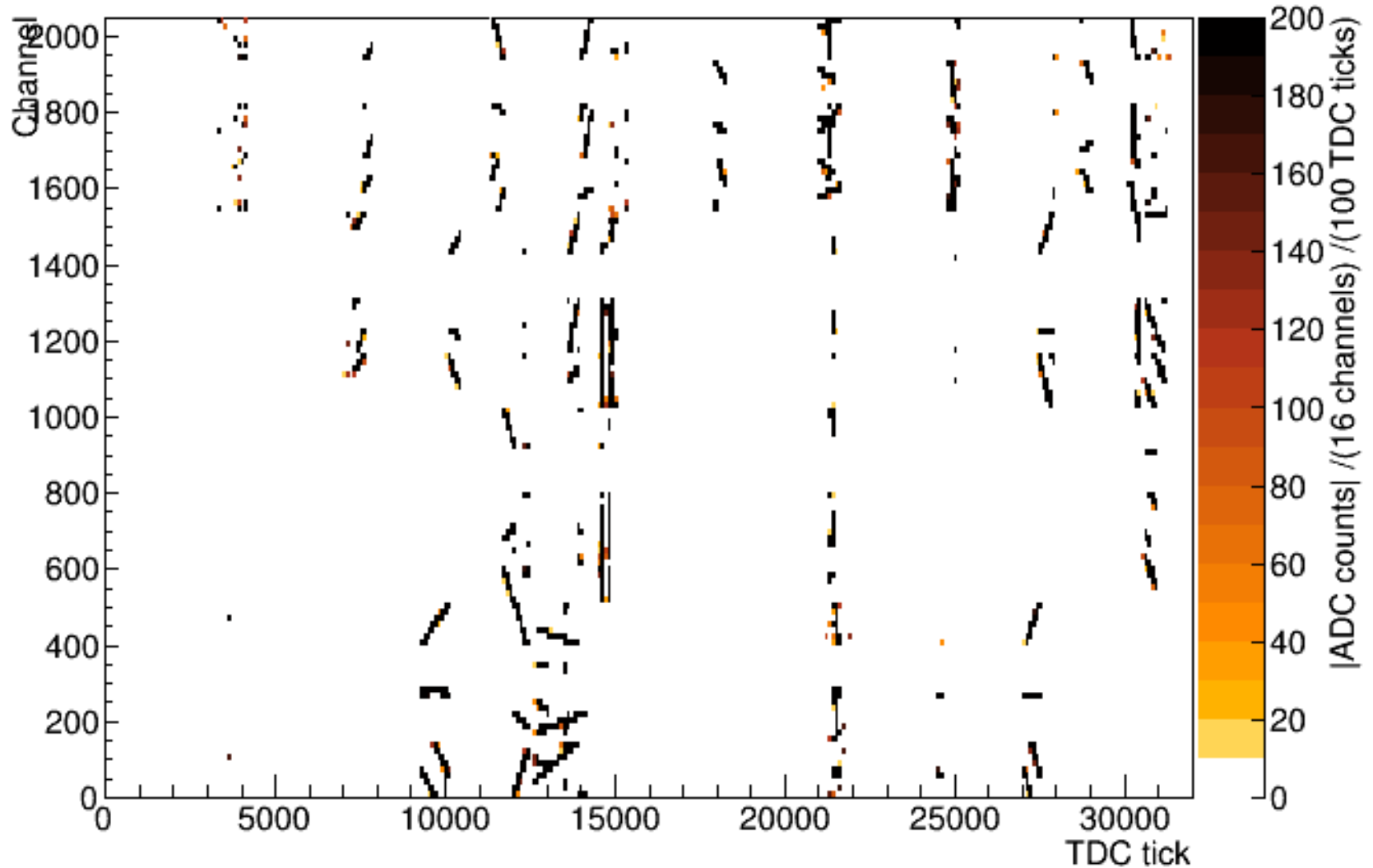
Plots of channel vs. tick from cosmic samples show

- 5-10 new events for each old event
- See following pages

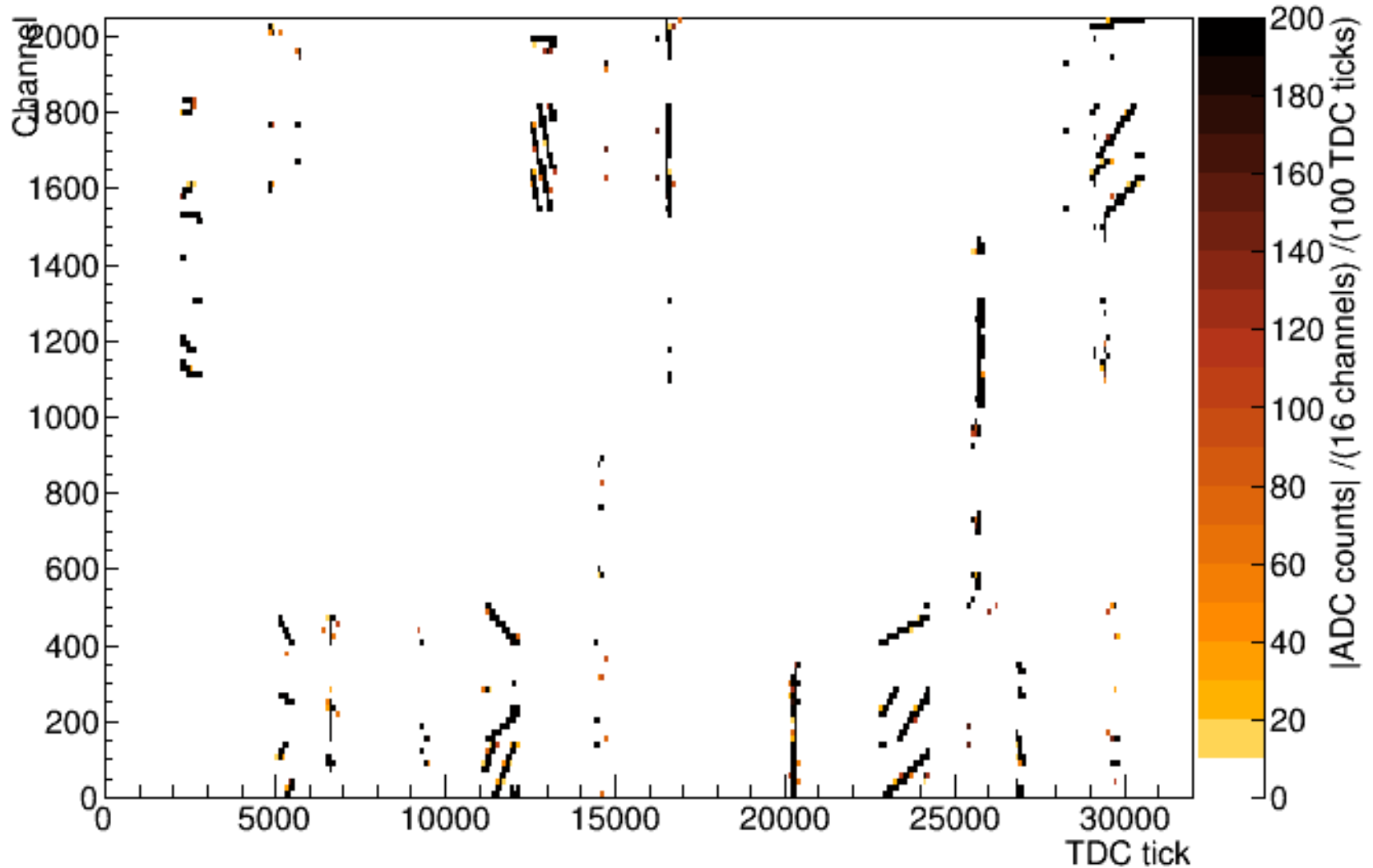
Raw signals for full detector event 3901



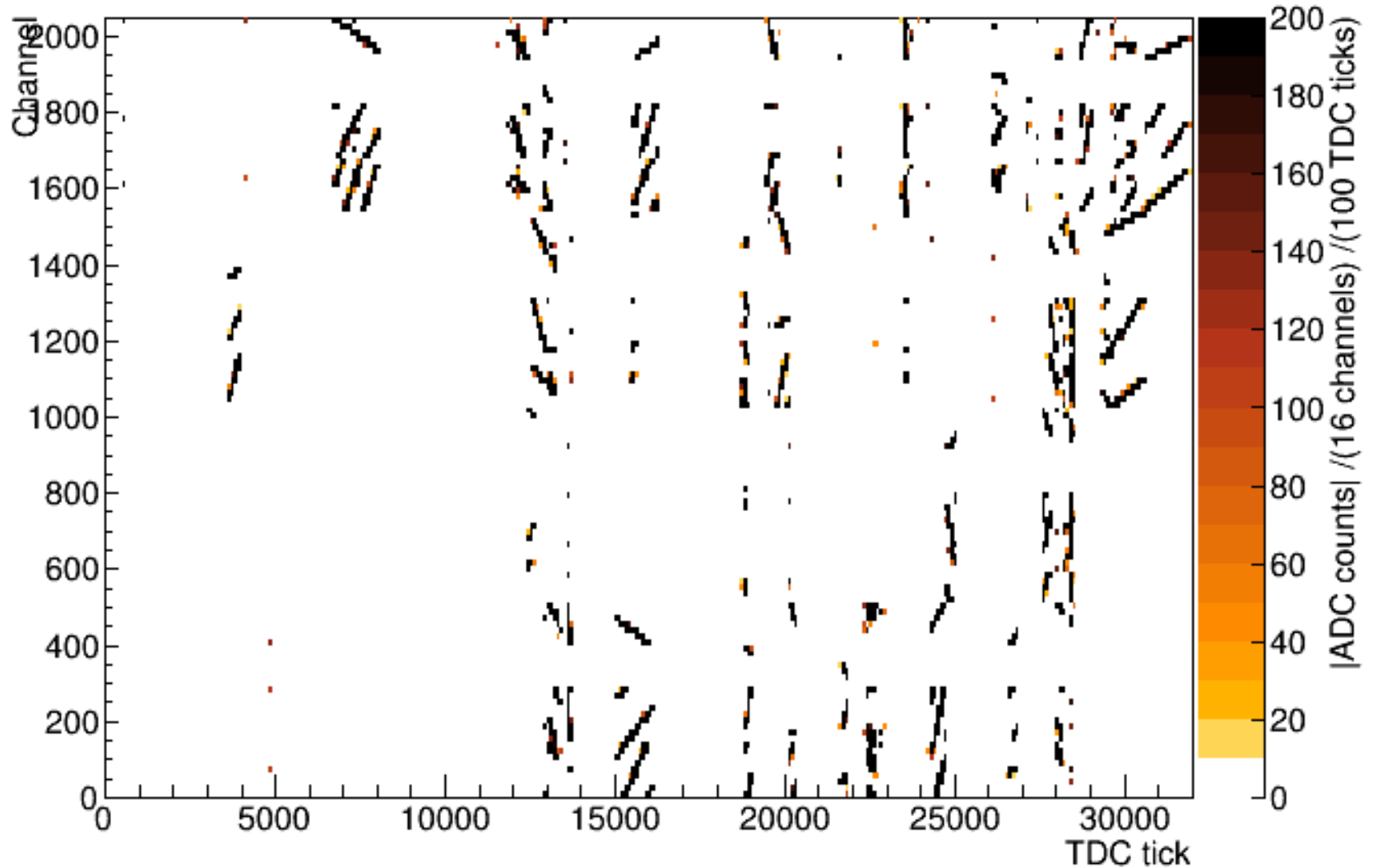
Raw signals for full detector event 3902



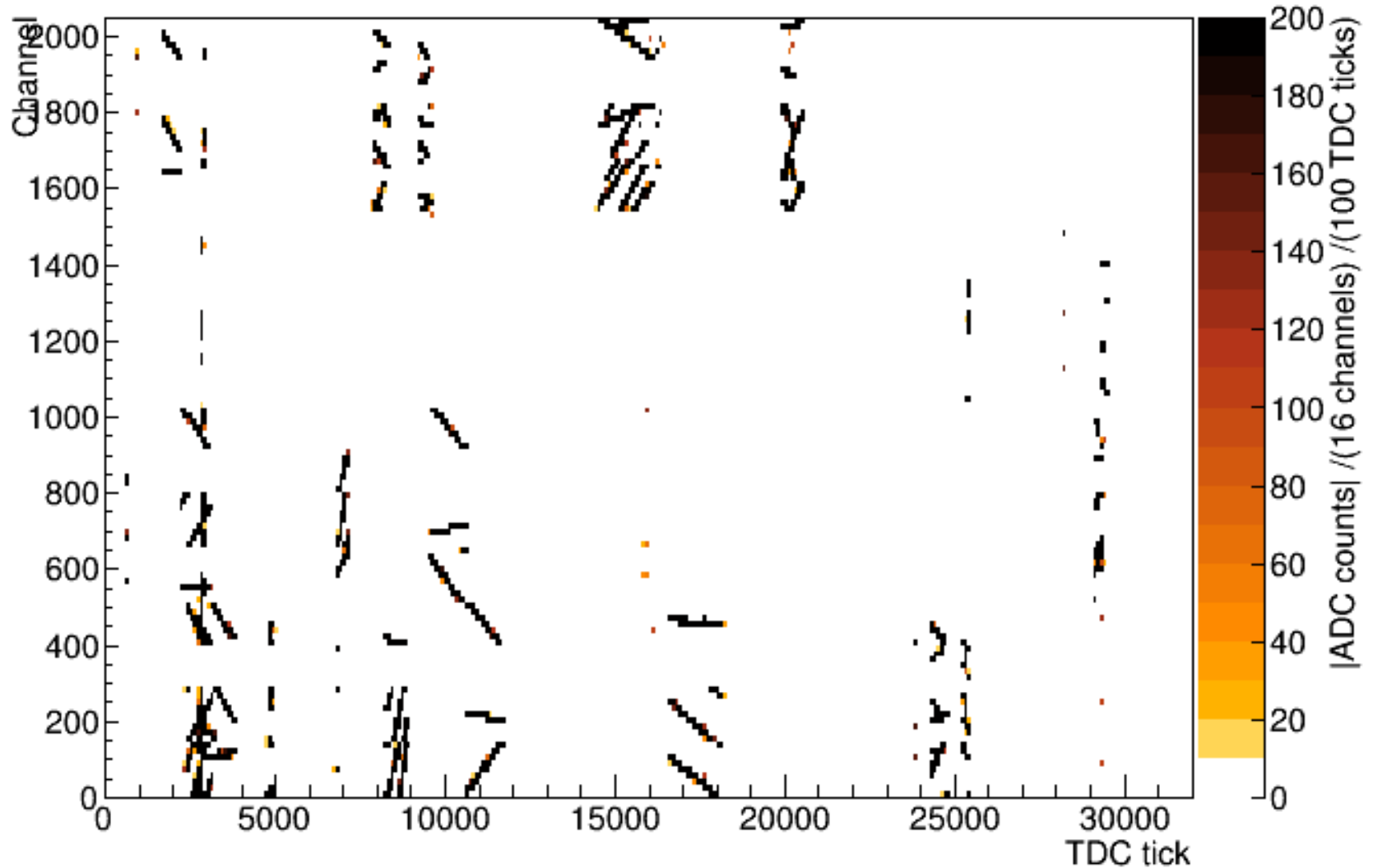
Raw signals for full detector event 3903



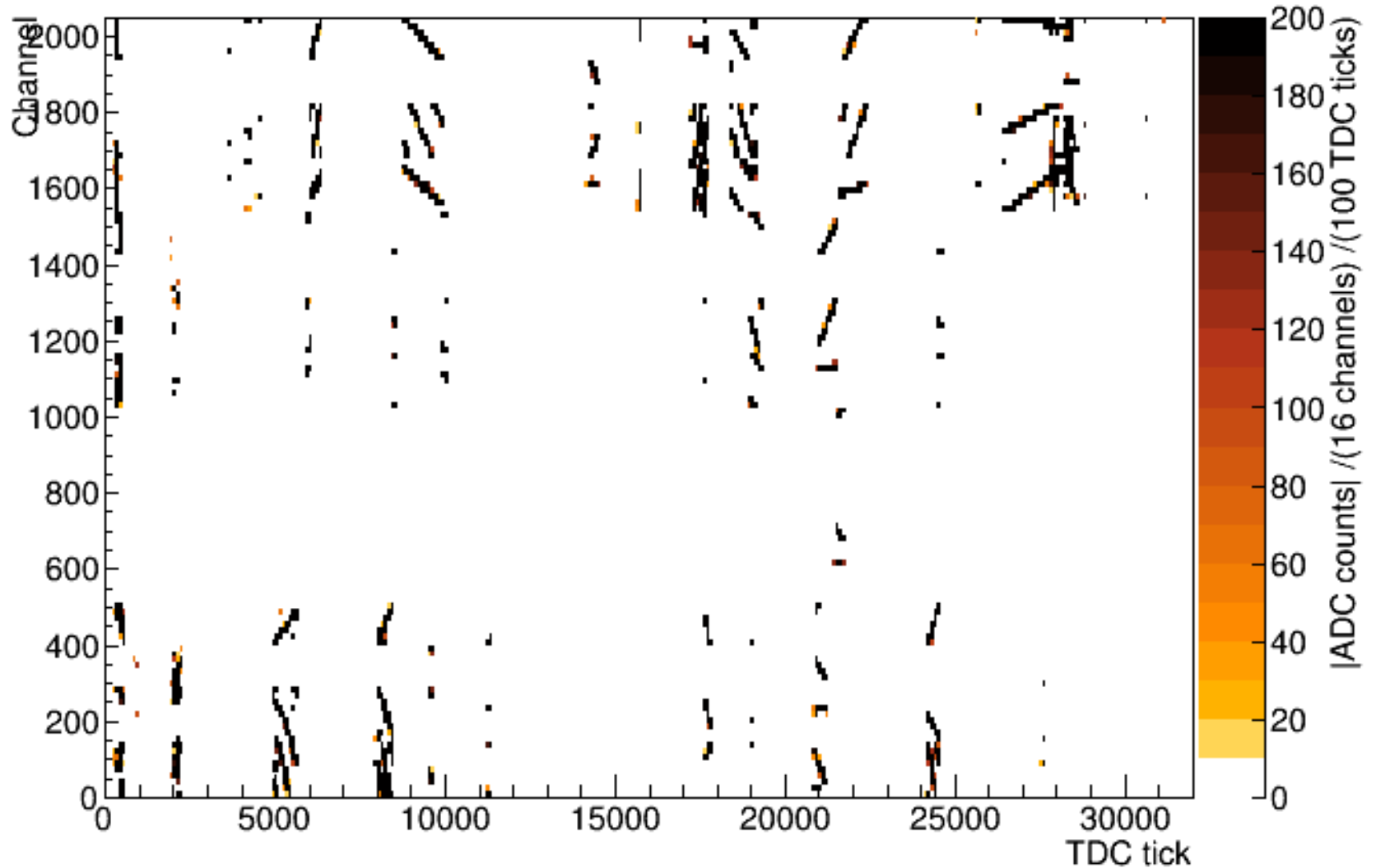
Raw signals for full detector event 3904



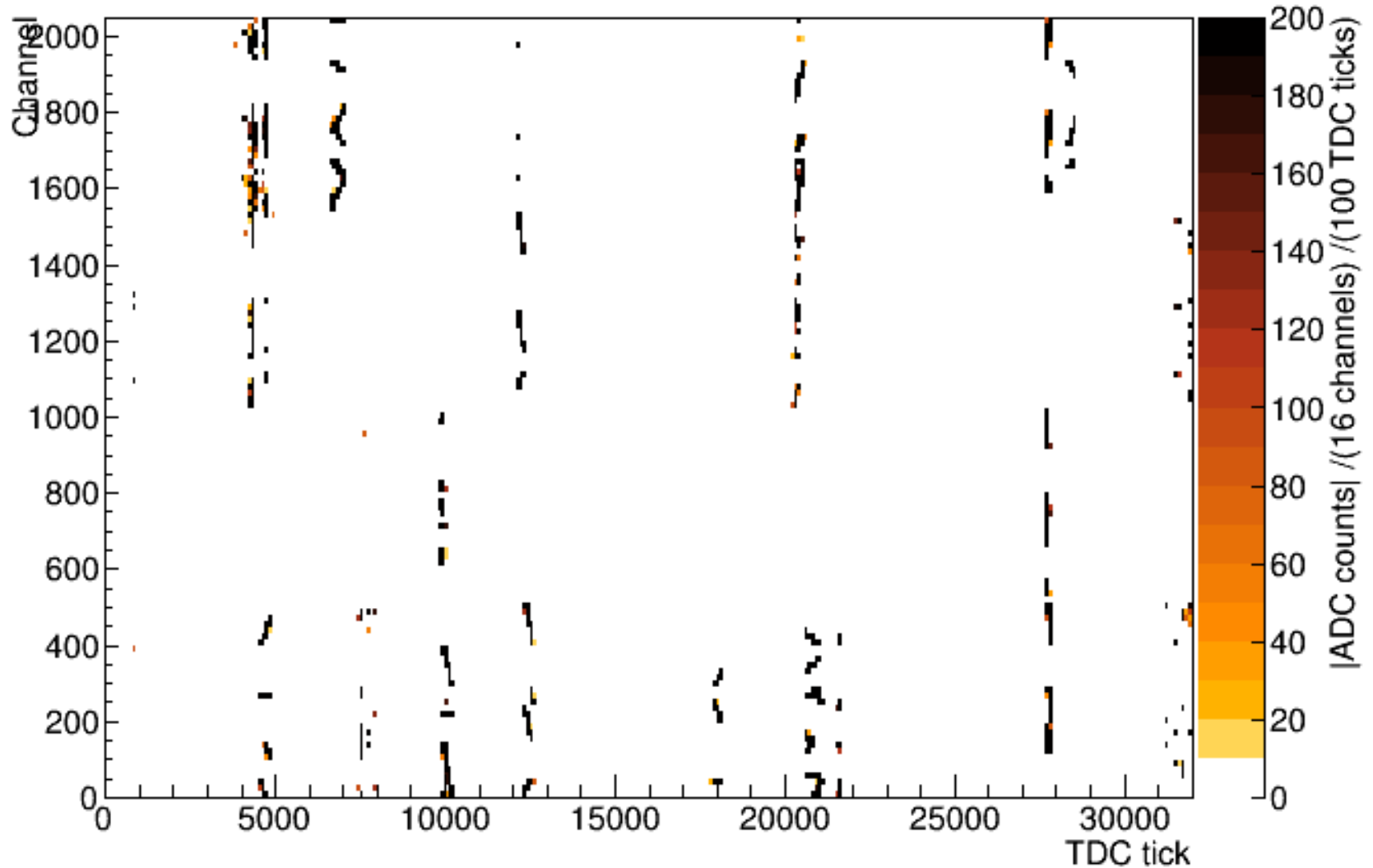
Raw signals for full detector event 3905



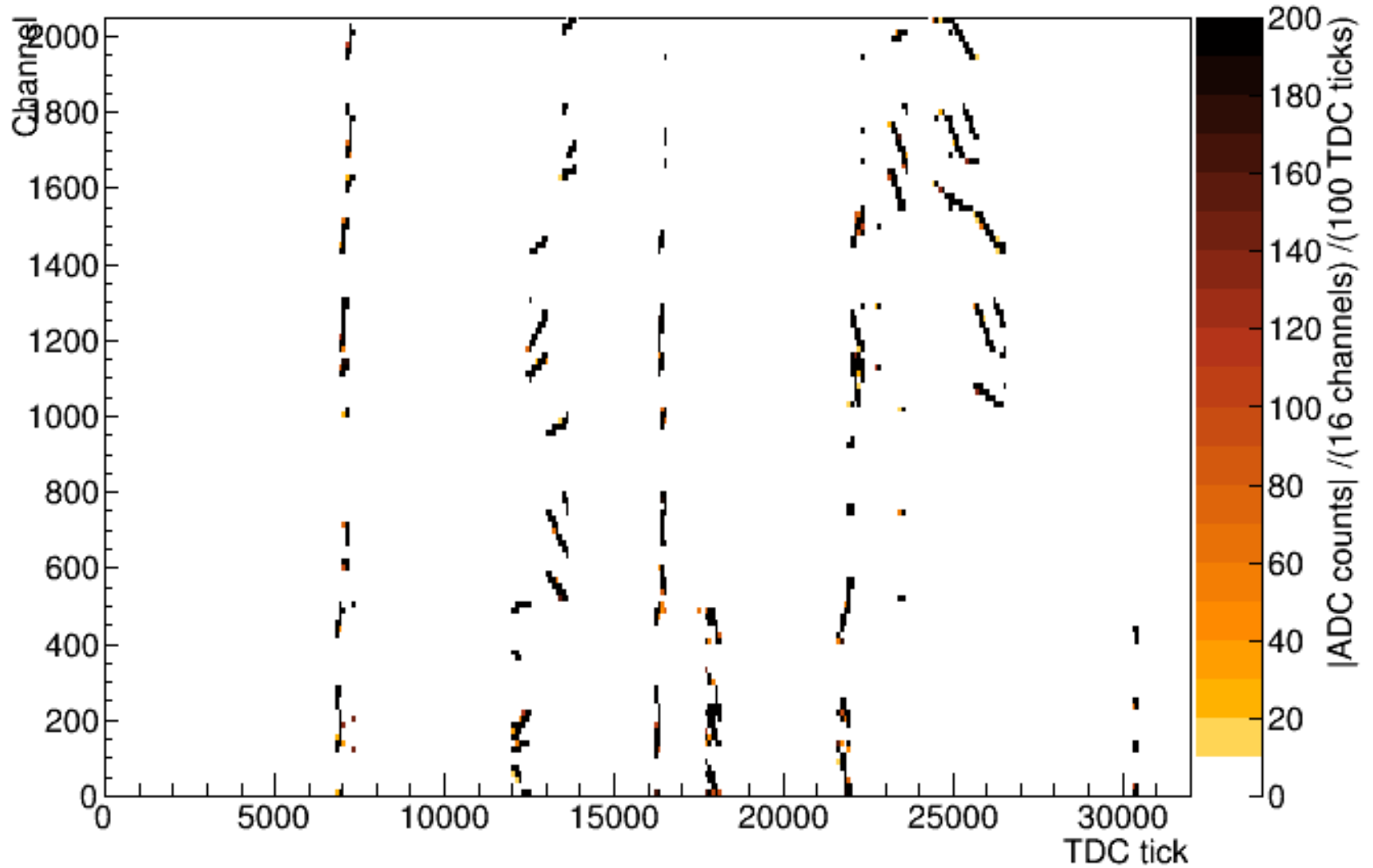
Raw signals for full detector event 3906



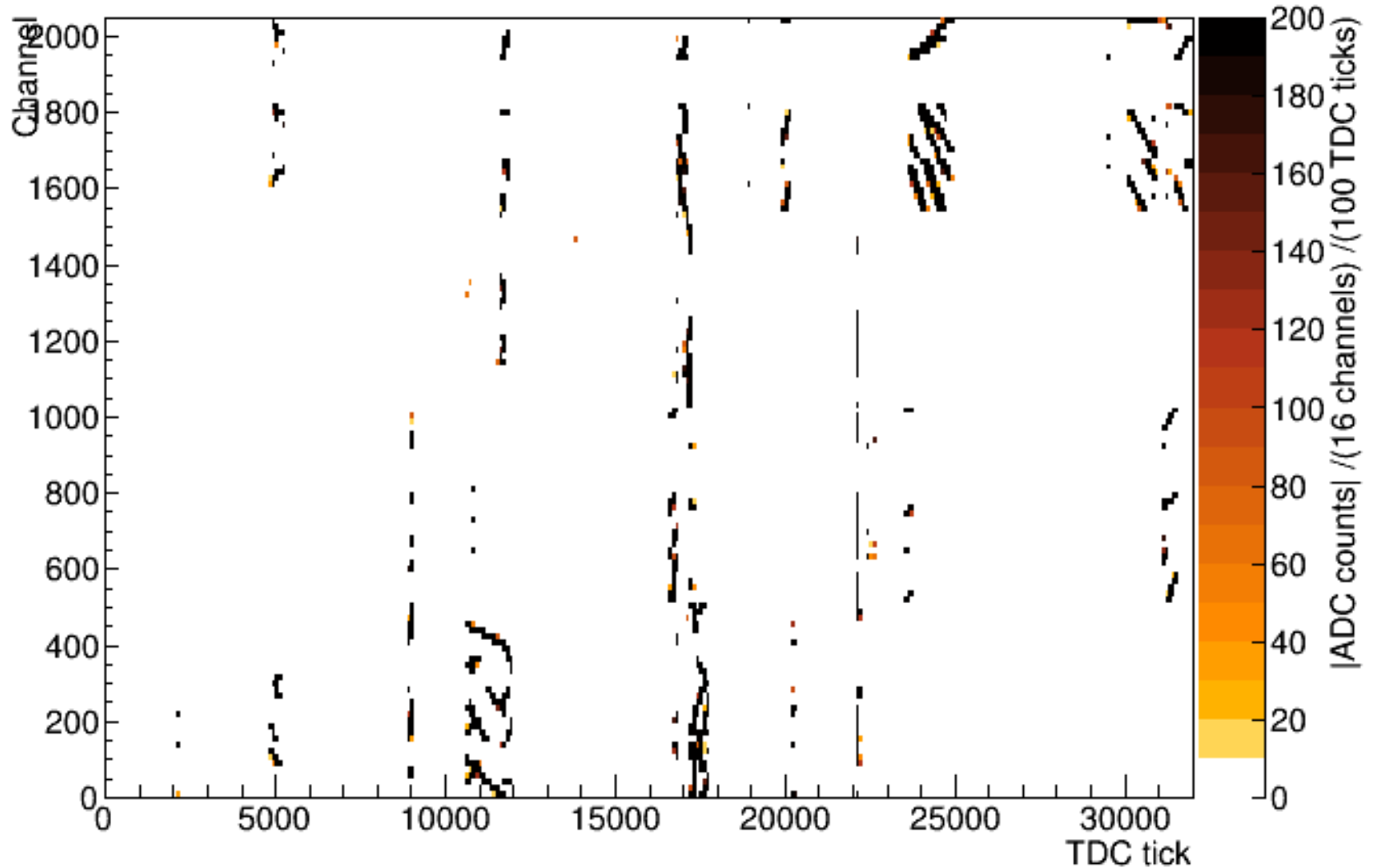
Raw signals for full detector event 3907



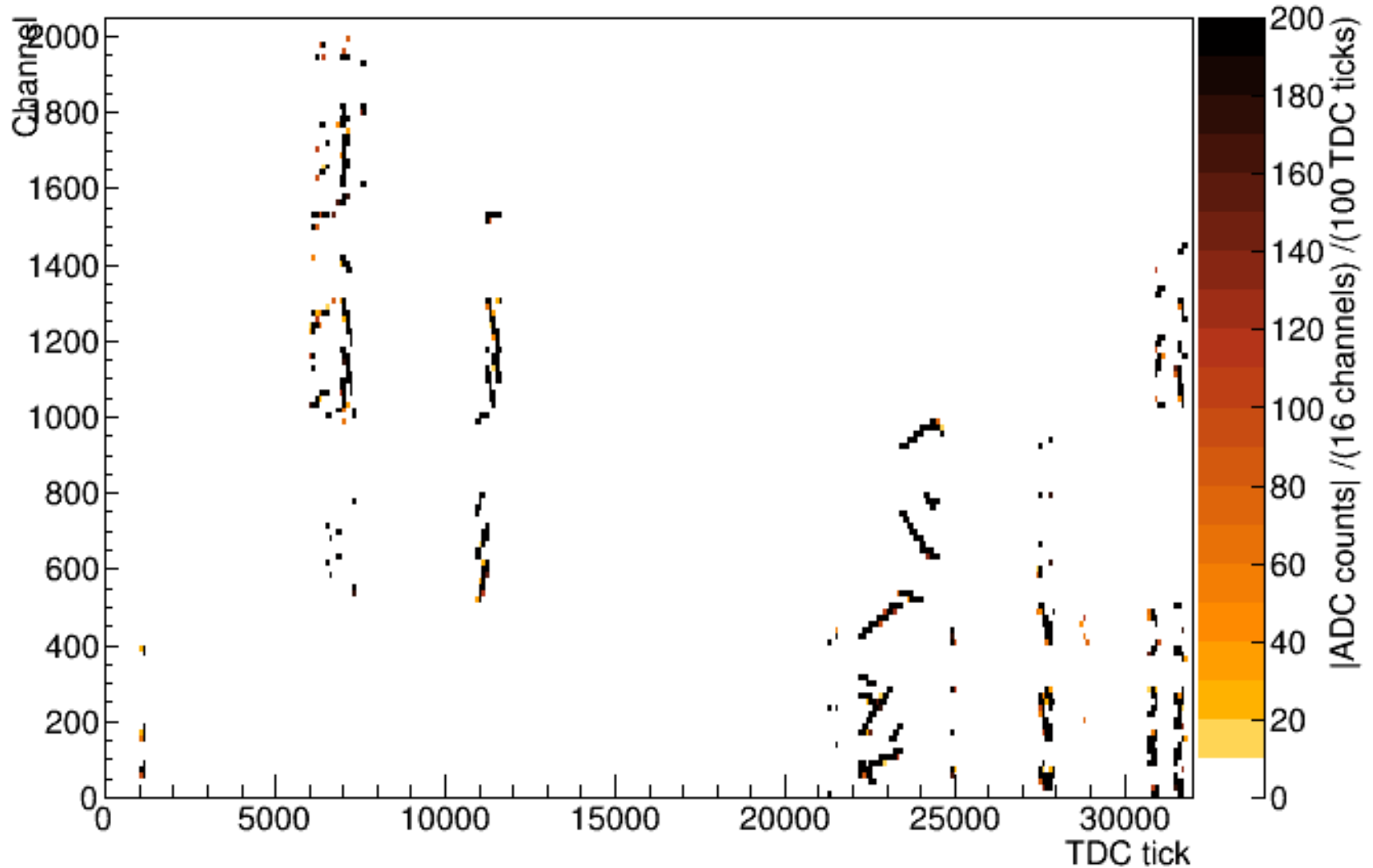
Raw signals for full detector event 3908



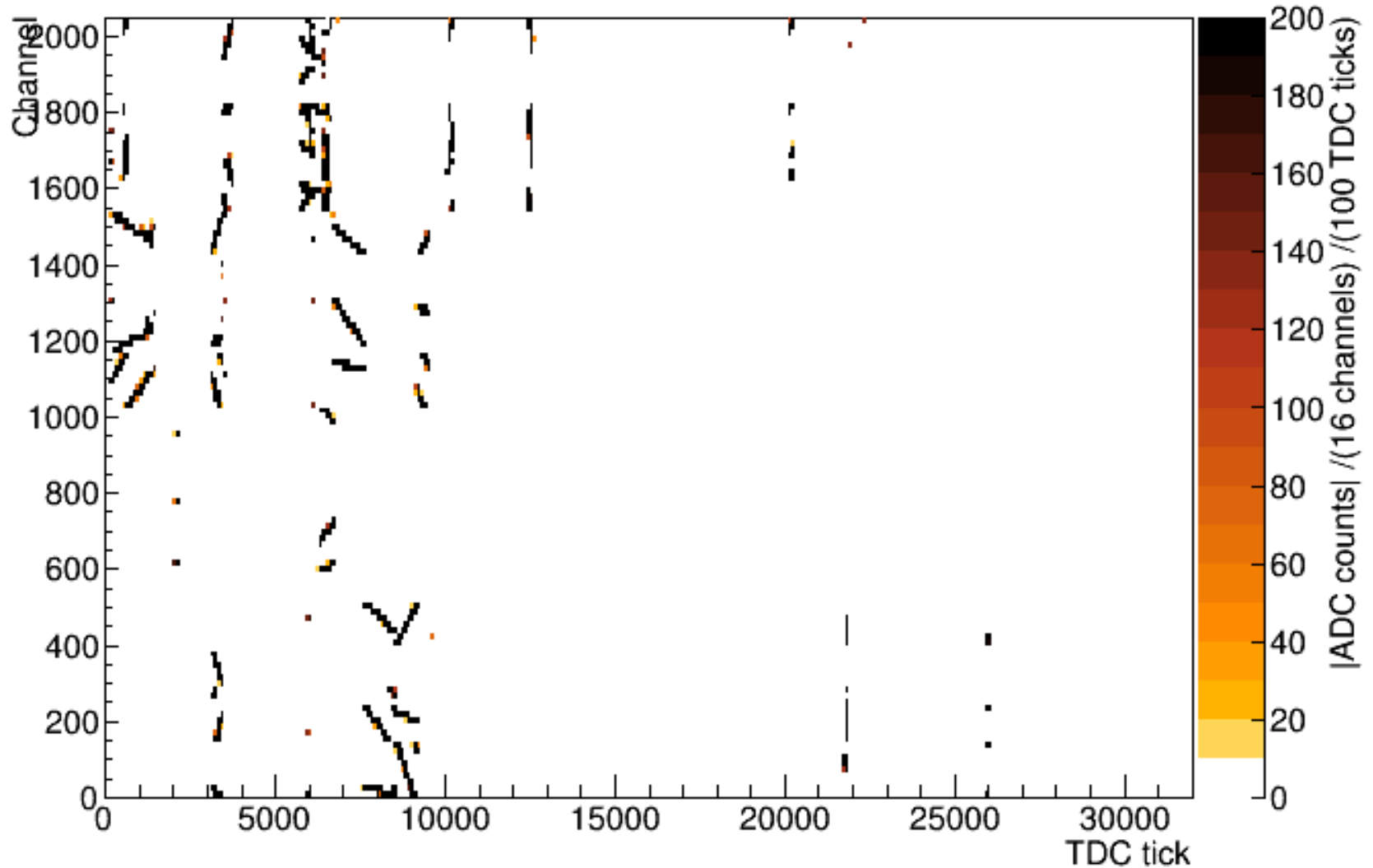
Raw signals for full detector event 3909



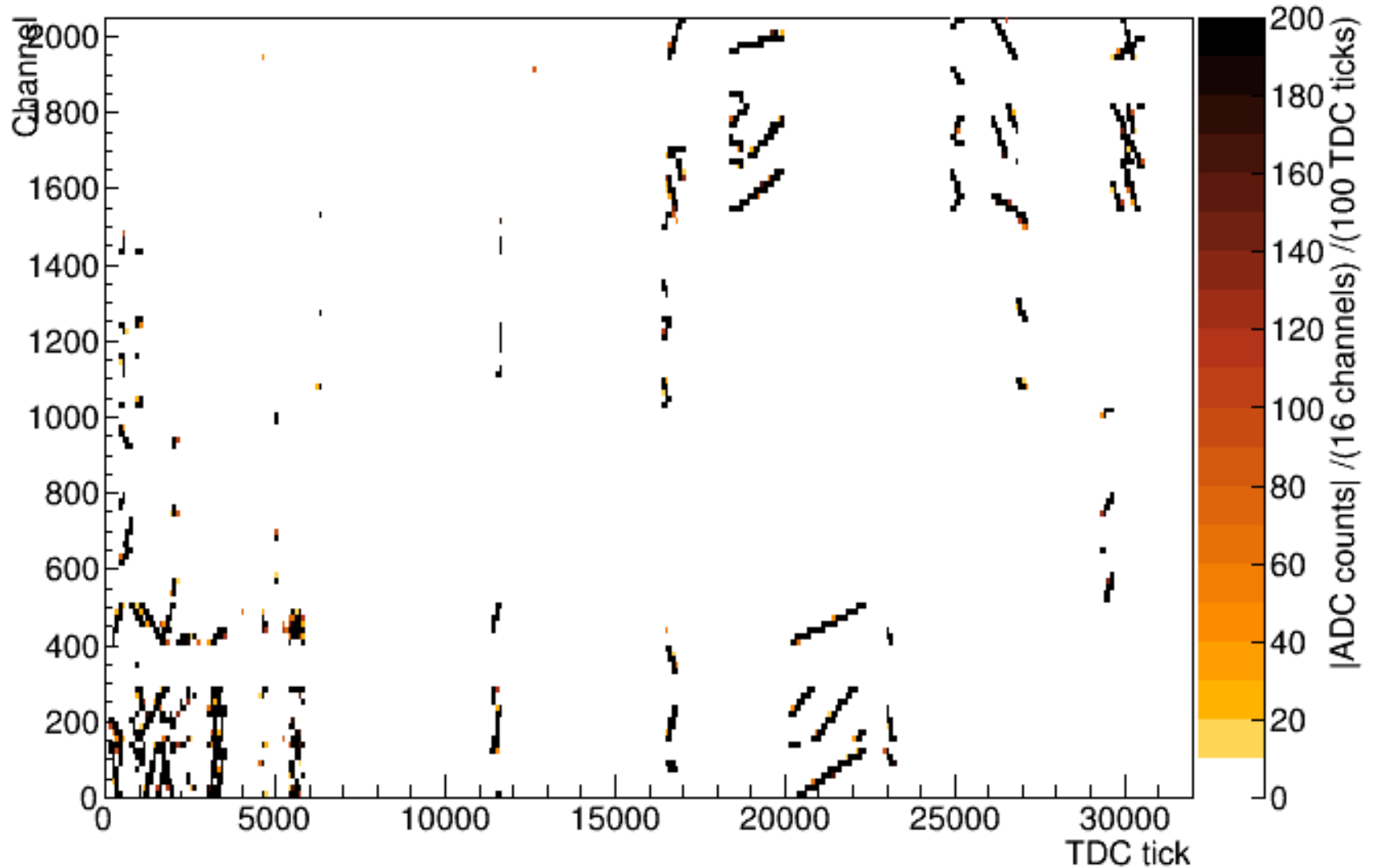
Raw signals for full detector event 3910



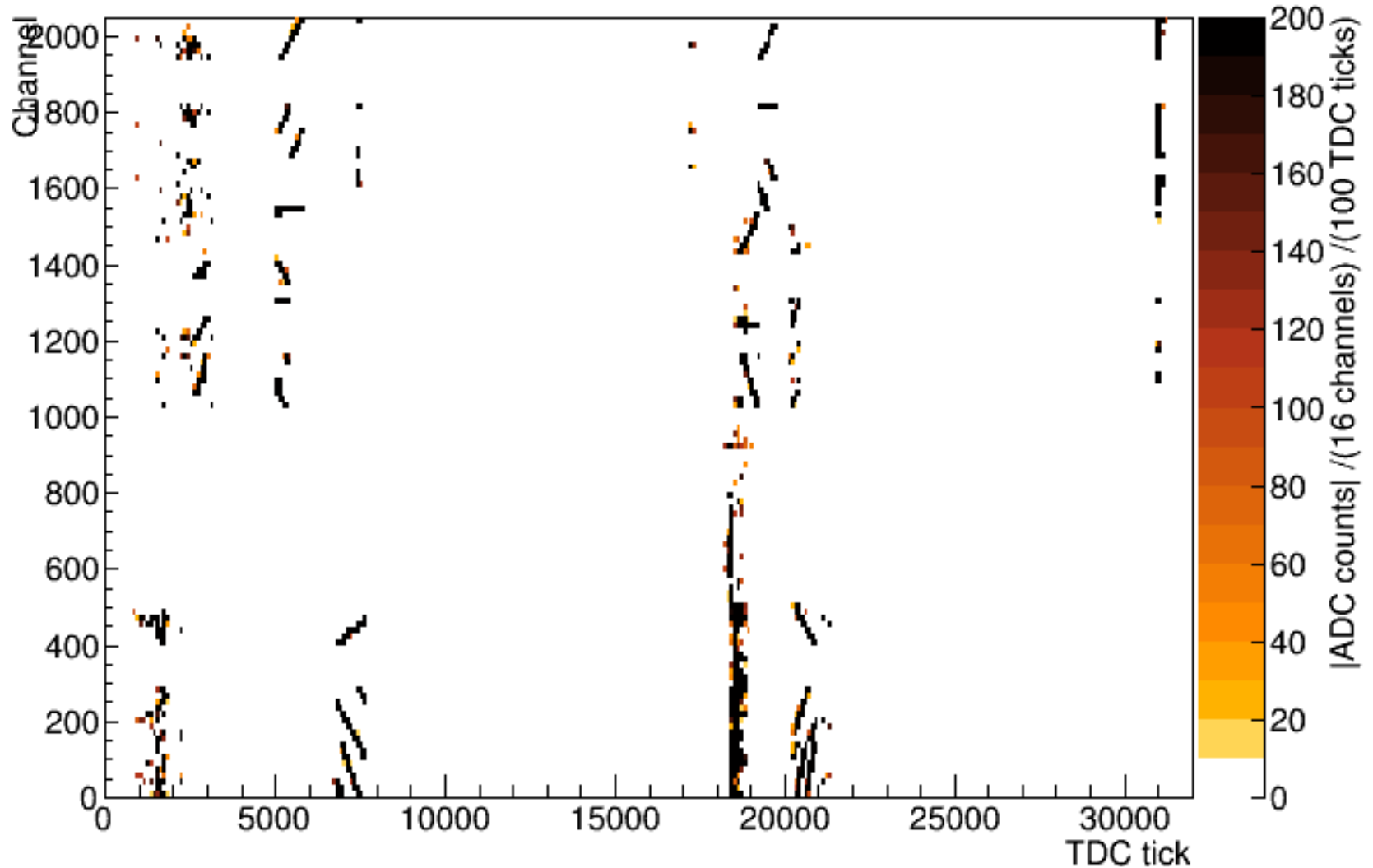
Raw signals for full detector event 3911



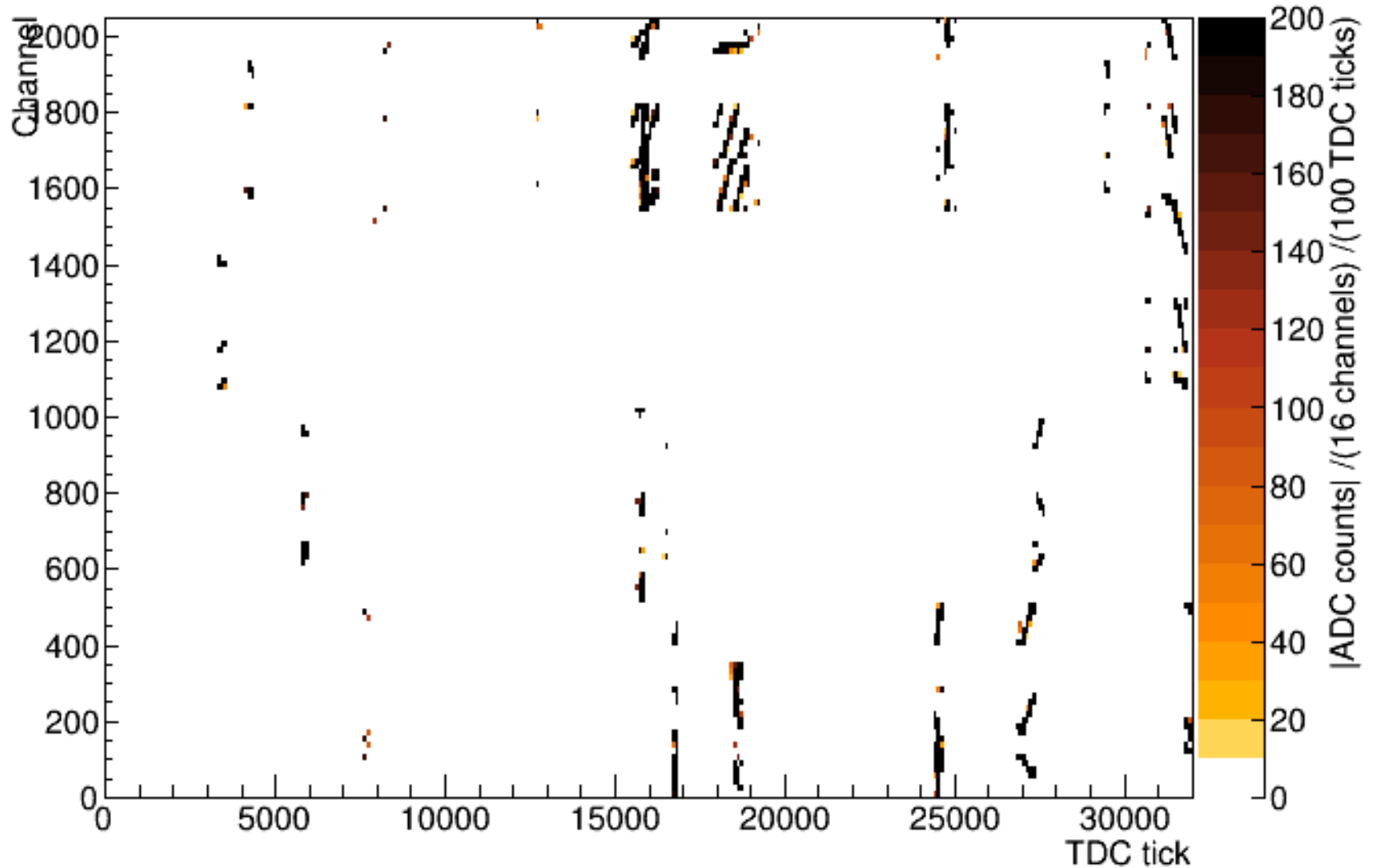
Raw signals for full detector event 3912



Raw signals for full detector event 3913



Raw signals for full detector event 3914



Raw signals for full detector event 3915

