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# Application of the Shiono and Knight Model in asymmetric compound channels with smooth and rough narrow floodplains

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**Afternoon, September 27, 2018 (Thursday)**

**Time: 16:00~18:00**

**Venue: *post-degree classroom* (Building 5)**

**Session 4: 8 presentations- Topic: “Civil and Structural Engineering”**

**Session Chair: Assoc. Prof. Marina Rynkovskaya**

S0002 Presentation 2 (16:15~16:30)

Application of the Shiono and Knight Model in Asymmetric Compound Channels with Smooth and Rough Narrow Floodplains.

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*Abstract*—Shiono and Knight Model (SKM) is one of the most popular models which is often used for simulating the flows in compound channels with wide floodplains. The model accounts for the effects of bed friction, lateral turbulence and secondary flows, via three key parameters  $f$ ,  $\lambda$  &  $\Gamma$  respectively. These parameters must be carefully calibrated to obtain accurate predictions. In this study, the application of SKM to an asymmetric compound channel with a narrow floodplain is examined in terms of the calibration requirements. Two sets of experiments that have smooth and rough floodplain and different flow depths are conducted and then simulated by SKM. In smooth floodplain cases, the results reveal that SKM model with the conventional calibration expressions of  $f$ ,  $\lambda$  and  $\Gamma$  is reasonably capable of predicting the distributions of depth-averaged velocity and boundary shear stress in the main channel. However, in the floodplain region, the expressions recommended for calibrating  $\Gamma$  need to be modified to improve the predicted results in that region. In cases of the rough floodplain, the results indicate that the lateral shearing is dominant over the secondary flow, so only the values  $\lambda$  in the main channel need to be changed from its conventional values to improve the predictions.