Solidity Effect on Corner Separation and Its Control in a High-Speed Low Aspect Ratio Compressor Cascade

Yumeng Tang , Yangwei Liu , Lipeng Lu

PII: S0020-7403(18)30421-1
DOI: 10.1016/j.ijmecsci.2018.04.048
Reference: MS 4303

To appear in: *International Journal of Mechanical Sciences*

Received date: 7 February 2018
Revised date: 12 April 2018
Accepted date: 25 April 2018

Please cite this article as: Yumeng Tang , Yangwei Liu , Lipeng Lu , Solidity Effect on Corner Separation and Its Control in a High-Speed Low Aspect Ratio Compressor Cascade, *International Journal of Mechanical Sciences* (2018), doi: 10.1016/j.ijmecsci.2018.04.048

Highlights

- Solidity effect on the evolution of 3D corner separation is investigated in a high-speed low aspect ratio compressor cascade.
- A new type of separation termed blade suction surface stall, is proposed, on occasion of negative indicator values.
- The relative position between the initial separation point and the blade suction surface throat position is linked
- with loss and associated to separation form.
- The newly proposed blade suction surface stall occurs when the initial separation point moves ahead of the
- suction surface throat position simultaneously with the confluence of the two end side separation zones in the blade middle aft.
- The blade end jet control scheme is demonstrated to verify a promising perspective of the passive blade end slot control strategy for mitigating 3D corner separation.