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

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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 ζ 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.

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