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**Patrick Cade** (pc388418@albany.edu) and **Rongwei Yang\*** (ryang@math.albany.edu), 10 Harmony Court, Cohoes, NY 12047. *A new joint spectrum and cyclic cohomology*. Preliminary report.

For a tuple  $A = (A_1, A_2, \dots, A_n)$  of elements in a unital algebra  $\mathcal{B}$  over  $\mathbb{C}$ , its *projective spectrum*  $P(A)$  is the collection of  $z \in \mathbb{C}^n$  such that  $A(z) = z_1A_1 + z_2A_2 + \dots + z_nA_n$  is not invertible in  $\mathcal{B}$ .  $\mathcal{B}$ -valued 1-form  $A^{-1}(z)dA(z)$  reveals the topology of  $P^c(A)$ . In fact, it furnishes a homomorphism from the cyclic cohomology of  $\mathcal{B}$  to the de Rham cohomology of  $P^c(A)$ . A particular case of this homomorphism leads to a high order Jacobi's formula. (Received June 20, 2011)