

**BOLITAS 2 ASSIGNED VARIABLE IDENTIFIERS**  
(as of June 2005)

<b>RANGE</b>	<b>ID</b>	<b>STRING ID</b>	<b>DESCRIPTION AND COMMENTS</b>
<b>1000-1099</b> Reserved	1000	PARTICLE.ALIVE	Signals whether a particle is "alive" or it should be ignored. Non-alive particles are not rendered by Bolitas.
	1011	PARTICLE.INDEX.X	Sorted particles in each direction.
	1012	PARTICLE.INDEX.Y	
	1013	PARTICLE.INDEX.Z	
<b>1100-1299</b> General use	1101	BFIELD.X	Components of the magnetic field vector (uniform)
	1102	BFIELD.Y	
	1103	BFIELD.Z	
	1111	BFIELD.X.GRAD.X	Components of the magnetic field gradient tensor
	1112	BFIELD.X.GRAD.Y	
	1113	BFIELD.X.GRAD.Z	
	1114	BFIELD.Y.GRAD.X	
	1115	BFIELD.Y.GRAD.Y	
	1116	BFIELD.Y.GRAD.Z	
	1117	BFIELD.Z.GRAD.X	
	1118	BFIELD.Z.GRAD.Y	
1119	BFIELD.Z.GRAD.Z		
<b>1300-1499</b> Particle properties	1300	PARTICLE.COLOR	RGB value for custom coloring of particles
	1310	PARTICLE.RADIUS	Particle radius
	1311	PARTICLE.DENSITY	Particle density
	1312	PARTICLE.KINETIC.ENERGY	Particle kinetic energy
	1313	PARTICLE.INTERNAL.ENERGY	Particle internal energy
	1319	PARTICLE.CONTACTS	Number of particles that are in physical contact with each particle
	1321	PARTICLE.X	Coordinates of the particle center
	1322	PARTICLE.Y	
	1323	PARTICLE.Z	
	1331	PARTICLE.VELOCITY.X	Components of particle velocity vector
	1332	PARTICLE.VELOCITY.Y	
	1333	PARTICLE.VELOCITY.Z	
	1341	PARTICLE.ACCELERATION.X	Components of particle acceleration vector
	1342	PARTICLE.ACCELERATION.Y	
	1343	PARTICLE.ACCELERATION.Z	
	1361	PARTICLE.ANG.VEL.X	Components of particle angular velocity vector
	1362	PARTICLE.ANG.VEL.Y	
	1363	PARTICLE.ANG.VEL.Z	
	1371	PARTICLE.ANG.ACCEL.X	Components of particle angular acceleration vector
	1372	PARTICLE.ANG.ACCEL.Y	
	1373	PARTICLE.ANG.ACCEL.Z	
	1381	PARTICLE.FORCE.X	Components of force vector acting on particle
	1382	PARTICLE.FORCE.Y	
	1383	PARTICLE.FORCE.Z	
	1391	PARTICLE.TORQUE.X	Components of torque vector acting on particle
	1392	PARTICLE.TORQUE.Y	
	1393	PARTICLE.TORQUE.Z	
	1400	PARTICLE.TEMPERATURE	Particle temperature
	1401	PARTICLE.GRANULAR.TEMP	Particle granular temperature (calculated from particle velocity)
	1450	PARTICLE.DIPOLE	Magnitude of particle dipole moment
	1451	PARTICLE.DIPOLE.X	Components of particle dipole moment vector
	1452	PARTICLE.DIPOLE.Y	
	1453	PARTICLE.DIPOLE.Z	

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	1497	PARTICLE.NUSSELT	Particle Nusselt number
	1498	PARTICLE.REYNOLDS.ROTATION	Particle rotational Reynolds number
	1499	PARTICLE.REYNOLDS	Particle Reynolds number
<b>1500-1699</b> Fluid properties	1501	FLUID.DENSITY	Fluid density
	1502	FLUID.VISCOSITY	Fluid viscosity
	1503	FLUID.KINEMATIC.VISCOSITY	Fluid kinematic viscosity
	1504	FLUID.HEAT.CAPACITY	Fluid heat capacity
	1510	FLUID.VOIDAGE.COARSE	Actual cell voidage in coarser grid, used for voidage interpolation
	1511	FLUID.VOIDAGE FLUID.VOIDAGE.FINE	When voidage is interpolated from a coarser grid, this variable represents interpolated voidage values; otherwise, it represents actual cell voidage
	1520	FLUID.U	Magnitude of fluid velocity (interpolated at cell center)
	1521	FLUID.UX	Components of fluid velocity (staggered)
	1522	FLUID.UY	
	1523	FLUID.UZ	
	1530	FLUID.PRESSURE	Fluid pressure
	1531	FLUID.PRESSURE.STATIC	Static component of fluid pressure
	1532	FLUID.PRESSURE.DYNAMIC	Dynamic component of fluid pressure
	1539	FLUID.PRESSURE.CORRECTION	Pressure correction term (SIMPLE algorithm)
	1541	FLUID.UX.GRAD.X	Components of fluid velocity gradient tensor
	1542	FLUID.UX.GRAD.Y	
	1543	FLUID.UX.GRAD.Z	
	1544	FLUID.UY.GRAD.X	
	1545	FLUID.UY.GRAD.Y	
	1546	FLUID.UY.GRAD.Z	
	1547	FLUID.UZ.GRAD.X	
	1548	FLUID.UZ.GRAD.Y	
	1549	FLUID.UZ.GRAD.Z	
	1551	FLUID.FORCE.X	Components of fluid body force vector
	1552	FLUID.FORCE.Y	
	1553	FLUID.FORCE.Z	
	1560	FLUID.TEMPERATURE	Fluid temperature
	1670	FLUID.RESIDUAL.MASS	Mass residual for fluid
	1671	FLUID.RESIDUAL.UX	Components of velocity residual for fluid
	1672	FLUID.RESIDUAL.UY	
	1673	FLUID.RESIDUAL.UZ	
	1674	FLUID.RESIDUAL.ENERGY	Energy residual for fluid
	1680	FLUID.NORM.RESIDUAL.MASS	Normalized mass residual for fluid
	1681	FLUID.NORM.RESIDUAL.UX	Components of normalized velocity residual for fluid
	1682	FLUID.NORM.RESIDUAL.UY	
	1683	FLUID.NORM.RESIDUAL.UZ	
	1684	FLUID.NORM.RESIDUAL.ENERGY	Normalized energy residual for fluid
<b>1700-1899</b> Interpolated fluid to particle	1701	FLUID.2.PARTICLE.VOIDAGE	Fluid properties interpolated at particle locations: voidage and velocity components
	1711	FLUID.2.PARTICLE.UX	
	1712	FLUID.2.PARTICLE.UY	
	1713	FLUID.2.PARTICLE.UZ	
<b>1900-1999</b> Overall bed properties	1901	BED.HEIGHT.MAP	Bed expansion, measured from bottom
	1902	BED.HEIGHT.AVERAGE	Average of bed expansion
	1911	BED.PRESSURE.DROP.AVERAGE	Average bed pressure drop (should match bed buoyant weight)

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	1921	COLLISION.COUNT.PP	Particle – particle collision counter
	1922	COLLISION.COUNT.PW	Particle – wall collision counter
	1930	BED.VOIDAGE.AVERAGE	Average bed voidage